THE

SOUTHERN AGRICULTURIST.

MARCH, 1839.

PART I.

EDITORIAL AND ORIGINAL.

Mode of Cultivating Corn.

Mr. Editor,—Many of our planters consider this crop of but secondary consideration. Some years ago, when cotton and rice sold at high prices, and corn at a very reduced price, it might have been a good policy to pay an exclusive attention to the cultivation of the former staples. But the same state of things may now be said no longer to exist. For several years back, corn has not brought in our market less than one dollar per bushel, and indeed, the price may with much more truth be put at one dollar twenty-five cents. This is its price in Charleston, to which did we add the expense of transporting it to our plantations, with the loss in measure consequent upon such transportation, the price would be still enhanced at least ten or fifteen per cent. And it may be safely taken as granted, that no planter within the last three or four years has had corn delivered on his plantation at a less price than one dollar fifty cents per bushel. Purchasing at such prices cannot but make him the looser, although his cotton crops were abundant and the staple brought good prices.

It is a question then which every planter ought to ask himself, whether it is not best for him to raise his own corn and to plant less cotton or rice? I think any one who will make the calculation will agree with me, that many a dollar might be saved by doing so.

Two acres of corn can be cultivated just as well as one of cotton. And if the plough is used, a boy and plough can cultivate four acres with as much ease as a full hand one of cotton. The acre that will yield 100 lbs. of clean cotton, will generally yield under similar circumstances, twenty-five bushels of corn.

100 lbs. of fine cotton at 40 cts.	$40 00	
25 bushels of corn at $1 25, - -		30 25
500 lbs. of blades, at $1 25 per cwt. -		6 25
5 bushels of peas, at $1.00 - -		5 00
Total, - -		$41 50
Balance in favor of corn, - - -		1 50

This calculation is of course applied to the planter who consumes his own corn. I do not say, that were he to raise corn for sale that the same balance would be in his favor—because then he would have to pay the expenses of transporting his corn to market, &c., which would considerably diminish the above price at which I have put the corn. But I do maintain that no planter can purchase corn in the city and have it transported to his plantation for less than $1 25.

But Mr. Editor, it will be said that twenty-five bushels of corn to the acre is a high average. So it is; and to produce it, the land must be well cultivated. It must have the same attention paid to it as cotton would have. The land must be as rich or as well manured as cotton land; it must be as well broken up—kept as free from grass, and in every other particular, must be as well attended. Such land with such attention, I affirm, after actual trial, will produce, even in South-Carolina, twenty five bushels of corn to the acre.

But allowing only fifteen bushels as the average, I maintain that two acres of corn can be as easily cultivated as one of cotton. That this is not mere assertion, take the following calculation, which every planter knows to be correct.

For Cotton.

One hand listing land and manuring the same under the list per day, - - - -	¼ acre.
Banking land, - - - - -	¼ ditto.
Planting, - - - - - -	½ ditto.

Four after workings, thinning, hoeing, hauling, a half acre per day, - - - -	2 acres.
	3 acres.

Corn.

One hand manuring and listing land per day,	¼ acre.
Planting same, - - - - -	2 acres.
Three after workings, thinning, hauling, &c. half acre each day, - - - - -	1½ ditto.
	3¾ acres

By the above calculation it will appear that in seven days one hand has cultivated three acres of cotton—while of corn, the same hand has cultivated in five days, three acres and three quarters—which gives nearly twice as much in favor of the corn—or to be more exact—if in five days, three and three quarter acres of corn can be cultivated; in seven days, nearly six acres may be cultivated.

One acre of fine cotton—100 lbs., at 40 cts.	$40 00
Two acres corn, fifteen bushels to acre, at $1 25 per bushel, - - - - -	37 50
Blades from same, 250 lbs. to acre, at $1 25 per cwt. - - - - -	6 25
Peas, 3 bushels per acre, at $1.00 per bush.	6 00
	$49 75
Balance in favor of corn, - - - -	9 75

In these calculations I have not taken into estimation the relative expense of gathering and getting out the corn and cotton. With corn, after it has been gathered, which requires but little time, all the labor is over. While upon cotton, every one knows that more labor is expended after it has come from the field than before it was gathered. But it will be said that I have not calculated the value of the cotton seed as food for cattle, &c. and as a manure—to which I answer, that the superior pasture which the corn field will furnish, over the cotton field, together with the greater time the corn culture will afford me for collecting manure, &c., will more than three times repay the loss of cotton seed. Hence then it will appear, that every thing considered, our planters are lost to their own interest, when they persuade themselves

that in planting cotton and buying corn, they are benefiting themselves.

If in the place of the hand culture that of the plough is used, ten acres can be cultivated with the greatest ease. Indeed, in some parts of this State, twenty acres of corn to the plough is a common average. My mode of cultivating corn with the plough is as follows:

As early in the winter as possible, I commence breaking up my corn land, by running the plough over it, so as to form parallel ridges five feet apart. The ridges are formed by running three furrows, one to form the line of the ridge, the other two just into it—by which operation, a small bed or ridge is formed. In this condition the land is left until just before planting; when the plough is again run as deep as a stout horse can draw it across the ridges thrown up in the winter, at equal distances of four feet. By this operation the land is regularly checked off at right angles. In each check my manure is dropped by the hand—in such amount as I can spare. If the manure has been well rotted, I drop my seed corn upon it at each check, placing from four to six seeds in the check. I then again run the plough upon each side of the ridge, which partly covers the manure and corn. After this, the workers, with their hoes, go over the field, and at every check cover the corn and manure which may have been left uncovered by the plough.

If, however, the manure has not been well rotted, I place it as before in each check; but before planting the corn, I run the two furrows so as effectually to cover the manure. Upon the manure thus covered, I plant my seed and cover the same with the hoe—first having well mixed the manure and earth in the check with the same.

A ploughman, with a good horse and plough, will ridge up and check two acres per day—allowing three furrows to the ridge, with one furrow for the check.

As soon as the planting has been finished, I now commence breaking up the spaces between the ridges so as to turn under all the vegetable matter that may be growing there. By the time this has been done, the corn is pretty well up, and the young grass begins to show itself about it. With a small shovel-plough I now run a furrow as near the young corn as possible, throwing the dirt from it each side. This gives the corn air—admits the

sun to the soil, which pulverising it, enables the sun's dews to penetrate the same, and feed the young plants. As soon as this ploughing has been gone through, I commence with a larger sized shovel plough, and plough up to the corn, following the check, until the whole spaces between the corn, each way, have been ploughed. Whatever grass may have grown between the corn is thus effectually covered and rotted.

The corn is now high enough to plant peas between it, which is done in the following way: Between the corn, where it stands five feet apart, I plant my peas with the hoe. After the peas are up I give it a working with the hoe, and at the same time haul the corn, giving to each check a small hill. This last working of the corn effectually destroys the grass around it, and the hills support the stalks against storms, &c. I give the peas one more working with the hoe, and then leave them to run their chance. From the peas thus planted, I generally make one picking, after which I leave the remainder as a pasture for my horses, cattle, &c. This I consider cheaper than picking them in. After the horses and cattle have made themselves fat upon them, by turning in the hogs they will also have their picking from the peas which have fallen to the ground.

A PLANTER.

Remarks upon former Articles.

Mr. Editor,—I take much pleasure in reading your valuable work; and my pleasure, let me assure you, grows by what it feeds on. Your two last numbers commence the year well, and if what follows, is in the same spirit, I have little doubt that many with myself will be the gainer, at its conclusion.

The "Memorial of the Monticello Society to the Legislature of South-Carolina," certainly deserved a better fate. With any other legislators than our own, the memorial would not have received the "go by." But, Mr. Editor, our planters are false to themselves. They have improper representatives; and while they have them,

their interests must be neglected. Is it not a blushing fact for us to acknowledge, that in a State whose wealth is so essentially agricultural, that so little for agriculture has been done. What encouragement has our Legislature at any time given to agriculture? What agricultural professorships or schools has it fostered and protected? What bounties has it granted to encourage the introduction of new and valuable staples? In other matters, and with other professions, our State has been liberal enough; but for agriculture, and agricultural men, it has done comparatively nothing. In other States of the Union, a different and more liberal policy has been followed, and wherever it has been pursued, the most cheering success has been the result.

Why should South-Carolina pledge millions to support a Rail-Road—and yet not one cent to agriculture? But you will tell me that the Rail-Road is a direct help to agriculture, because by it, the planter will be enabled to get his crop the quicker to market. But what is the getting of a crop to market in consideration to the making of it? I am not opposed to Rail-Roads, or to any kind of internal improvements; but I maintain, that it is not the best policy in the world, to take our labor from the field to construct roads, which, when finished, will have little to be conveyed over them. It is a good thing for the West to be enabled to have its abundant produce sent to a good market on the sea shore; but it does not do as much good, when our own fields are thereby neglected, and we obliged to buy our corn, and meats, and almost every thing we consume. If we are desirous of carrying on a prosperous commerce, let us recollect that we cannot do so without something to do it with. We must have capital; and that capital must come of our successful agriculture. We cannot hope to reap where we have not sown. These homely truths should be recollected by our planters, and they should insist upon having them attended to. If our planters would have their interests regarded, let them see to it themselves—let them make it a condition with the candidate for public favor, that he will attend to their wants, and not be found lacking when he is called upon. If our merchants want a measure carried, they vote for such men as will support their views, and woe to his popularity if he neglect to do so.

Our planters should do the same. They possess the actual wealth of the State, and if they will, they can have matters as they want them. Let them come out in their might, and they need not ask favors, but command them. If the Monticello Society, would have their measure carried, let them, before memorializing the Legislature, invite a convention of agricultural men from all parts of the State. Let our planters and farmers, from the seaboard to the mountains, be aroused to their interest—let them act in concert, and how will it be possible to resist their demand. They are the masters—if they will submit still to surrender up their power, they must be content to serve other interests.

"A Cotton Planter," in your last number, recommends as a preparation of cotton seed for planting, that the seed be thrown into tubs of water, and the floating seed be thrown away as unsound. This experiment, Mr. Editor, I have tried as directed in the article alluded to, and must say that precious little seed will be left for planting, if all the floating ones be thrown away. The truth is, there is so much of oil about the cotton seed, that it will seldom or ever sink; and this is the case with the very best seed. The plan recommended by "A Cotton Planter," I have long pursued with my corn; but think there must be some mistake about the cotton seed.

"Experience" on the cultivation of Irish potatoes, has presented many facts which I know to be correct. He tells us, "I have found, by many years experience, that if potatoes are planted in a mellow soil, they need scarcely any hilling. They will bed themselves at that distance from the surface of the ground, which gives them the greatest advantage to procure nourishment. This depth, I have generally found, is about four inches.

In support of this, I can give my own experience. During the last season, I planted largely of Irish potatoes. Some of them, I hauled up three or four times after they had sprouted; others I gave but one hauling to. Those that were hauled but once, I covered over with pine trash—these were by far earlier than those which were hauled oftener.

I will here state another fact which may be useful to your readers. Irish potatoes may be grown from the slips, like the sweet potato. As soon as your potato tops

have grown about one foot high, cut them off and plant the same as you do the sweet potato, only have the beds nearer each other. The potatoes from these will be later, but they will be more numerous, and decidedly more mealy.

Your article on the Silk Culture is highly interesting, and I am glad to have from you the promise that the subject will be continued. But, does it not appear to you, Mr. Editor, that people are entering too sanguinely into the cultivation of the mulberry. It does appear to me, that if all the trees which are this year planted take root and grow, that we shall have more than sufficient for the next year, to feed all the worms that may be raised in the country? Upon this subject I should like to hear from you.

If you like my remarks, Mr. Editor, they are at your service—and if I find anything more in your journal, either to commend or blame, you may hear from me again. Your's, &c.

A READER.

"A Reader" has our thanks for his "remarks"—we shall be ever glad to receive them.

We fully coincide with him in his sentiments in reference to the "Memorial of the Monticello Society," and trust that onr planters will profit by his suggestions.

The experiments in the selection of cotton seed, we have tried, and think the mistake arises from the fact that "A Reader" did not permit the seed to remain long enough to soak. If the cotton seed be permitted to remain in the water from five to six hours, we can ourselves vouch that all the good seed will sink to the bottom, while the defective ones will float.

We shall shortly comply with "A Reader's" request on the subject of silk; meanwhile we refer him to some of our selected articles on the subject.—*Editor.*

PAGINATION INCORRECT

Certificate of the produce of one acre of Corn; with observations, by AGRICOLA.

The undersigned, a committee of the Agricultural Society of Liberty County, Georgia, do hereby certify that on the 15th of September last, they measured carefully, by a sealed measure, the product of corn raised by Doctor Wm. P. McConnell, from one acre of *manured* ground, which yielded eighty-three bushels, three pecks, and three quarts—for which, being the successful competitor, the Society awarded him the premium of one hundred and fifty bushels of corn.

WM. J. WAY,
E. W. RUSSELL, } *Committee.*

Walthourville, Oct. 27, 1838.

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Messrs. Editors,—I send you the above certificate, signed by a committee of the Agricultural Society of Liberty County, from which you will perceive that we have turned our attention to the cultivation of corn, an article too long neglected, or deemed only a secondary interest by many of our planting friends on the seaboard, from the circumstance no doubt of their efforts being mainly directed to the culture of cotton. This policy, however, we find has proven illusive, an *ignis fatuus* that has led many of our respectable planters (to say the least) into a most unpleasant dilemma, especially during the two past years, when corn could scarcely be procured at any price.

There were fifteen gentlemen enrolled as competitors for the prize, several of them having made from fifty to seventy-three bushels to the acre. So far as I know, eighty-three bushels of corn has never been made before from one acre of ground in the lower parts, either of Georgia or South-Carolina. Dr. McConnell's plantation lies on tide water, and he selected for the experiment a piece of high land, cleared perhaps before the revolution, and of course much worn, but for the last five or six years had been planted in cotton, and highly manured.

The corn (yellow gourd seed) was planted the 10th of March, on beds about fourteen inches in width, seven feet from the middle of one bed to that of the other, two rows on each bed a foot apart, the stalks also a foot apart on the rows, and set in a *zigzag* form. This left a clear alley of six feet, and gave 12,600 stalks to the acre. The

corn was ploughed twice and kept clean with a hoe. I will remark, that about the middle of June, the beds were entirely covered with oak leaves, to obviate the effects of a drought should it happen, but the rains the latter part of that month, and first week in July made the corn. This is our first effort, next year I hope we may be able to make a better report still of our success. Planters generally, in the lower counties I trust, will soon see their real interest in this matter, and learn practically to depend upon themselves for the staff of life. In conclusion, I would mention that the Society awarded to Mr. Wm. Dunham the premium of seventy-five dollars as the most successful competitor (out of fifteen) for having raised forty-six bushels and a half of corn on an acre of ground in its natural state. AGRICOLA.

Remarks.—We have been long since convinced that much larger crops of corn might be raised in the Southern States, than are usually produced, by more attention being paid to a system of manuring. The above communication proves the fact beyond dispute; and we trust, that for the next year, we may have many such to communicate.—*Editor.*

Importation of English Cattle into Charleston.

Mr. Editor,—I have been a little surprised at seeing no notice in your journal of the late importation of Durham cattle by Mr. Robert Larmour (I believe of your city.) I am informed that three of the choice heifers were purchased by Dr. James B. Davis, of Fairfield, for himself, Col. Hampton and Gen. Adams, at a price ranging near one thousand dollars; the stock being out of Richard Blundell's stock, by Lord Darby's bull, and inferior, I am informed, to none in Kentucky.

Will you give your readers information as to the number sold or unsold, and furnish a general sketch of their pedigrees, &c.? SALT WATER.

Of ourselves we are unable to answer the above interrogatories. It will afford us great pleasure, however, to receive from some of the purchasers of Mr. Lamour's importation, a description of the cattle alluded to.—*Editor.*

On the Cultivation of Sweet Potatoes.

Mr. Editor,—In complying with your request, I give you my practice in the cultivation of potatoes. It may contain some errors, but being derived from experience, I am inclined to recommend it.

High, sandy, or yellow soil is the best, both for roots and slips. Slips may however, be planted on moderately low land, that is well drained. When slips are planted on the latter, they are more watery and will not keep so long as when planted on high lands. On new lands, care should be taken, if the leaves are not decayed, that they should be burnt; but if they are it will do well either for roots or slips.

The best method of preparing land for sweet potatoes, is by moveable cow-pens. It saves the time of carting out manure, and it also yields a greater return than any other mode that has ever been practised. You should commence making your cow-pens just early enough to allow you time to go over your land by the time you are ready for planting. After you have finished, you will find that the land will become hard and compact. Then mark off your land into lines five feet apart, so as to have twenty-one beds to a task or quarter acre. Next run two furrows with the daggon plough down each line, by which the soil will become loose and mellow; and now bed up so as to finish by the latter part of March, when the seed should be planted about six inches apart. If you have not cowpened your land,—compost, cotton seed, rotted marsh or sedge, and also mud, are excellent manures, if properly applied. You must cover these manures well, and give them time to rot in the land before planting. Cotton seed, if to be applied in proportion of one to two bushels to the bed, and covered early, so that it will have time to vegetate, is good for either slips or roots.

Salt mud is best on high land; it may be used on other lands as the maturer of the roots. Marsh and sedge, if applied in proper quantities, when rotted, is also excellent. Rye, oats, and other green crops, if you plough the stubble in, will act as a powerful manure, when rotted. As soon as the potatoes are up, carefully pick out all the grass and weeds on the top of the bed so as not to

injure the roots of the young plant. As soon as it begins to shoot out vines, the grass should be again picked, and the dirt must be hauled up to the plants. The hoe should not be used at this time, for it does more harm than good.

There are various kinds of sweet potatoes, viz :—The yams or Spanish, leather coat, brimstone, with red and white skins; red, with white hearts. The yams or Spanish potatoes will thrive well on high land which is manured. They produce largely, but do not come very early. They are the best potatoes to keep.

The leather coats much resemble the yams, and differ from them only in size and flavor, being larger and more mealy. The brimstone are an early potato, and will do well in almost any soil; but they will not do to keep as a provision crop. The red, with white hearts, are the earliest potato—they produce largely on any soil and keep well, and as an early crop, are generally preferred by the negroes. The leather coat potato is the most delicate and best flavored for table use.

I am not accustomed to writing for the public eye, Mr. Editor, though I have endeavored to comply with your request; and I hope you will, at all events, understand my meaning.

JOHN'S ISLAND.

Remarks on the above.—Few crops can be of greater importance to our planters than that of potatoes—but it is much to be lamented that this crop seldom receives the attention it demands. When properly cultivated, a very few acres of this root will feed a whole plantation for five or six months in the year; and that too at so small an expense of time and labor, in its cultivation, as scarcely to be felt:

Under proper management, the planter may seldom fail of producing from eighty to one hundred bushels of sweet potatoes to the acre; which amount is as plantation food, equal to forty or fifty bushels of corn. This calculation, our friends of the Middle districts seem never to have made; or if ever they have made it, either a blindness to their own interests, or some mismanagement, has caused them too little to consider what is so obviously their interest.

"John's Island" seems to give the preference to the white heart potatoes with red skins, over the "yellow hearts" or brimstones—affirming that they keep better, &c. Upon this point, however, we differ from him. From most planters we have heard the decided preference given to the brimstones as being a sweeter and more delicate potato, at the same time being equally early, and capable of being preserved through the winter.–*Edit.*

Cotton Seed.

Mr. Editor,—In your last number 'A Cotton Planter' recommends a mode of selecting cotton seed, by soaking it in water, &c.

Now, sir, I know that most of the diseases which occur to our cotton seed, arise from permitting too large a bulk of it to be kept together. This does very well during winter, but if any bulk of cotton seed be permitted to remain during the spring, before planting, it will almost invariably heat, and become injured

Let me recommend, therefore, that as early as possible, in February or March, all cotton seed intended for planting be spread out in a large room, in order that the seed may be well dried. This will prevent many diseases in the plant.

Your's, &c. T. L. C.

February, 1839.

Agricultural School Books.

Under this head we would call the attention of our readers to a valuable article from the Franklin Farmer, published in Frankfort, Ky. It is a good and auspicious omen for the interests of agriculture, when its first principles begin to be so thoroughly and anxiously investigated.

These interests are by far the most important to us of any part of our confederacy. We are essentially an agricultural people, purely, absolutely so. It is at once our pride and our boast, that in the culture of our lands we reap the harvest of well employed labor, without the clashing and jar of mercantile speculation or the anxious care of commerce.

> "O fortunatos nimium, sua si bona noriut
> Agricolas! quibus ipsa procul discordibus armis
> Fundit humo facilem victum, justissima tellus."

So said the poet of husbandry, and the heart of every planter and farmer will respond to the sentiment when he looks around him on the wide fields enamelled with the full flowers or the bursting pods of one of our great staples, or on the yellow and bending ears, heavy with grain, which compose the others.

To be able to give a "reason for the faith that is in you," should be the privilege of the true farmer, and without such scientific knowledge as may lead him to the causes of his prosperity or reverses his mere practical experience may indeed benefit himself, but cannot aid the advance of the science itself. Those practises, which time and success have approved, should be established upon the firmer basis of knowledge, and thus be handed down stamped with the record of due trial and approval to the acceptance of those who are to follow. To this end nothing can so immediately conduce as the dissemination of true principles inculcated in a simple manner and elementary form, and instilled into the future men of the succeeding age, by the deep prints of early instruction.

Chemistry, a sister science, is already auxiliary to the purposes of agriculture—she spreads the vast resources of her searching tests before us, and pours into our hands the product of her laborious and penetrating industry. Soils are resolved by her aid into their constituent elements, and thus display the proper pabulum and support for the various sorts of crops which they are destined to sustain. The far reaching and philosophic minds of Davy and of Chaptal, had not deemed themselves engaged in an unworthy occupation, when their full energies

have been bent upon the application of chemistry to agriculture. The same genius which devised the beautiful applications of galvanism to the purposes of science, did not spurn the homelier though not less important task of distinguishing the integral particles which constitute the vegetable creation.

But the works of these eminent men, though intended and fitted for the benefit of so large a class, are in the hands of few, and by those few are rather considered as matters of curious speculation than solid foundations for active exertion.

And yet we are aware that there is something as novel in the idea of agricultural school books and agricultural schools, to most of our readers, as the steam engine in all its vast applications was to the past century. Notwithstanding we would venture to predict for the work hinted at in the following remarks, if ably executed, a popularity and success commensurate with its importance; nor do we believe the day to be far distant, when schools of agricultural science will be even in this country no longer portents and prodigies foreboding changes, but regularly established and well supported as those of any other branch. And why should they not? Why should not that on which the livelihood of nations depends be as well understood and as closely reduced to principles as the science which but teaches to prolong the rapidly waning life in the shattered frame, or those which only spread a grace and decorous beauty round laborious existence.

If there be any reason why these things should not be, it has not as yet occurred to us. But we should leave the author of the following remarks to speak for himself, merely indorsing his opinions with our best commendation, to the enlarged and liberal consideration of the public.

"The importance of introducing elementary books on agriculture into primary schools is now very properly receiving the serious consideration of the most enlightened friends of education and improved husbandry in every quarter of the United States. That the employment of such books in the common schools of the country would result in the most substantial benefits to the agricultural community, no reflecting mind can doubt. It would elevate the standard of education and information in the farming class and ultimate in advancing still more

the dignity, success and profits of their pursuits. When it is considered that four-fifths of the children of the country are destined for farmers and the wives of farmers, it is inexplicable that no more has been done to provide *suitable* education for them. In the schools of the country, no attention is given to agricultural studies. No instruction is imparted in view of fitting a vast portion of the children—the future *men* of the country—to conduct intelligently and successfully the business of life in which they are necessarily to engage and which too, is the most important and productive business of mankind. There is not in print a single agricultural school book in this country; or if there is, it is not employed. And yet this country is more exclusively agricultural than any other. How is this, and why is this? Perhaps it will be answered that practical agriculture cannot be taught at all in primary schools. Granted: But elementary agriculture can be as well taught in such schools as any other art or science; and we hold that the *practice* cannot be successfully taught without an accompanying knowledge of the *theory*. This assertion will doubtless startle many who are successful farmers, but who have never had any theoretical education, and who even discard its value; but it is, nevertheless, not the less true. Those very persons have more theory than they are themselves aware of. The truth is, they do nothing, which is not suggested by some theory. They never set a plough, a hoe, a harrow, a rake, a scythe, or any thing else in motion, except in accordance with some theory pre-established in their own minds, and by which all their practical operations are conducted. All operative agriculture is as certainly suggested and guided by theory, as that man is a rational, not an instinctive being. Otherwise, the farmer would be no more entitled to that honored and honorable name, than the beast that draws his plough. The objection to "*theory*," understood in its *true* signification, is an objection to the employment of *mind* in the guidance of our actions. It is true that what is sometimes called *theory*, often fails; it is no less true that what is called *practice*, often fails. Shall we therefore discard both? False theories and false practises are often inculcated and enforced, to the great injury of mankind. It has ever been so. It ever will be so. And the nearest approach which mankind will ever make to that perfection of mind and

judgment, which shall enable them to discriminate between true and false theories and practises, will be attained only when their theoretical and practical education is perfect. How then shall the farmers attain this educatiou? We do not pretend to answer fully, that momentous question. We cannot. Few can, satisfactorily. But we are very certain it can *not* be attained, under the present systems of education, which bestow no attention to, and impart no instruction on, the subject of agriculture. We are convinced that agricultural education must begin in the primary schools. It must begin at the beginning. The infant must suck the mother's breast. But we shall be asked how can instruction, in a practical art, be communicated in primary schools? It might as well be demanded, how can surveying, a knowledge of law, medicine, divinity or any other thing else be taught? Do surveyors, lawyers, doctors or divines, commence *practice*, before learning the elementary principles of practice. What should we think of a community which required a physisian to administer medicine to the sick, who had never read a medical book, and simply because there is a foolish idea abroad, that theory and practice do not agree? No one would tolerate such empiricism. It would be hooted and scorned by every body. The community would require the physician to learn the elements of his art and science—the theory and practice of the healing profession. Equally important is elementary education to the farmer and equally absurd and ridiculous would be the requirement that he should commence practice, ignorant of its theory. But the subject is vast enough for a volume; and we cannot of course treat it in a column. The grand business of imparting an agricultural education, however, may be commenced in our primary schools, by the introduction of elementary books. For instance: A boy having learned to spell, has a reading book put in his hands in order to learn to read. Instead of giving him a book of selections, containing flowers of literature, wit and sentiment, why not give a little book, containing and illustrating in a clear and simple manner, the elements of that art and science which he is to practice in all after life? He can learn to *read* as well from such a book as from any other, while at the same time, his ideas are awakened by and fastened

upon the practical subjects which concern him for all time to come, his mind expands, and he lays the foundation for that education which fits him for the intelligent, successful prosecution of his future business. The Farmer's Register and the Genesee Farmer have been recommending "Davy's Agricultural Chemistry" and Chaptal's "Chemistry Applied to Agriculture" as very proper school books. These works are truly valuable and would answer admirably for class books. They are the best on the subjects of which they treat; and of course are preferable to others. They can be improved upon, however; and the more recent discoveries of science will be added to them. But they are not adapted to the primary schools. They suppose the pupil to have attained the *elements* of chemical science; and hence we want a more elementary work, adapted to the youngest learners. We trust the awakened interest which is felt on the subject, will result in supplying the *desiderata* in agricultural school books; and indeed, the efforts of the advocates for a high grade of education for agriculturists, will prove abortive without the help of elementary works.

We have on our table for examination, about one half of a manuscript volume, intended as an elementary school book. The author, whom we have intimately known for years, is one of the most competent men in the United States, to produce a work exactly suited to the wants of the community. He is a gentleman of varied and extensive learning—his attainments embrace a vast store of profound literature and science—he is a writer of established and popular reputation—he has been for many years a distinguished teacher of youths—and, moreover, he has spent much of a long life in the practical labors of agriculture. *And he has been successful in all.* The work is written in a series of conversations—the most engaging and captivating form of communicating instruction to learners. The style is simple, clear and explicit, and withal, lively and spirited. It is therefore calculated to engage and enchain the attention, so difficult to be fastened, in young minds. Every difficulty in every step, in the attainment of agricultural science, is removed as the learner proceeds, and his path opens smoother and wider before him as he advances; and he is conducted through the simplest but at the same time, most

philosophical steps to the end—a satisfactory knowledge of the *principles* of agriculture. Here he is brought, a fit student of Davy and Chaptal, and ready to enter the *practical school.*

We have said this much of the work and its author, as an introduction to some extracts (or perhaps the whole) which we are at liberty to insert in the Franklin Farmer, the publication of which we mean shortly to begin. The public will then decide whether it is well designed to effect its desired object; and they will then be prepared to say whether such a work shall be placed in the hands of school children. It is intended by the author, if the public approve it, to publish it in a cheap form for a school book.

The advantages of Irish Potatoes to the Planter.

Mr. Editor,—Last year I was complaining, in the presence of a friend, that my corn crop had been very short, and that I would have to buy largely. He advised me to plant Irish potatoes; but it then being the month of April, I thought it too late. He soon, however, convinced me that it was not, and his advice and the result of it, I shall now give you.

According to his direction I selected a quarter acre of dry soil. This I broke up completely with the plough, after which I harrowed it, so as to pulverize it completely. This done, I run it off in parallel drills four feet apart, sinking the plough as deep as it would go. I used a shovel plough. I now filled up the drills with cowpen manure mixed with marsh mud, dug from the creek; and upon the manure thus scattered, I planted my potatoes at eight or ten inches apart in the drills. After the potatoes had been set out, I run two furrows with the plough, one on each side of the drill so as to cover the potatoes completely.

About one week after this I run the harrow over the whole field thus planted, and in a great measure levelled the ridges which the plough had thrown up over the potatoes.

In one week more the potatoes were all up—the plough was again run on each side of them so as to cover them two or three inches; and then the harrow is again run over the ridges thus made, which very effectually pulverises away lumps which the plough may have left.

After this last working, the potatoes will only require one more ploughing between them, and your crop is made. If any grass grows among the roots, take it out with the hand.

I never raised a better or more abundant crop of potatoes, than by pursuing the above plan. By cutting them up and mixing them with salt, I fed my work horses with them once a day—and my negroes were exceedingly well pleased to take them with a little bacon, in part substitute for their corn. Not even the tops were lost, being boiled and fed out to the milch cows.

ECONOMY.

Poultry.

Mr. Editor,—It is much to be regretted that our market during the spring and summer months is so badly supplied with meats. Every where else these seasons are the best for the markets, but in Charleston, one can hardly get any thing palatable to eat.

This arises from our farmers not paying proper attention to their poultry. What is sent to market is so inferior as seldom to be fit to eat. What numbers of ducks, chickens, and turkeys might be raised for our market is beyond calculation. I have conversed with many of my neighbors, and they make complaints of the difficulty of raising these—but it appears to me that they mismanage in some way or other. Ducks, I scarcely ever fail to raise. The great secret in attending them, is to give them little water when young. These birds being aquactic in their natures, many persons will wander at this. But such treatment invariably gives them colds; their wings soon begin to droop, and they die off in fits. My treatment of them I will here repeat to you as given some years since.

Ducks, when just hatched, are always inclined to fever, from their pinnion wings coming out too soon. This acts upon them as teething does on children. The young ducks should, consequently, be kept from every thing, which may have a tendency to create cold in them. To prevent this, therefore, I always allow my young ducks as little water as possible. In fact, they should only have enough to allay their thirst, and should, on no account, be permitted to play in the water. If the person lives near the city, liver and lites should be procured; and these should be boiled and chopped up fine, and given to the young ducks. Or, if fish, crabs, oysters, or clams, can be procured, these should be given. In case none of these can be got, all the victuals should be boiled before feeding. Boiled potatoes mixed with homonie are also excellent. Half of the ducks which are lost, are, because raw food is given them. To sum up all in a word—if you wish to raise almost every duck that is hatched, give them little water, and feed them on no food which is not boiled. By observing this plan, I raise for market, and for my own table, between two and three hundred ducks every year.

Turkeys are also found difficult to raise with most persons. The following treatment will be found excellent: When the eggs hatch out, let the hen and chicks be confined in a garden, or any other place where the young ones can sun themselves. Let them be fed with hominy for two or three days; then carry them to a rail-pen, in a rye, oats, or buck-wheat patch; confine the hen, and feed at least three times a day with hominy or small grain. The young ones will soon run about catching insects, and will come to the hen's call. The hen should be thus confined until the turkies are about *half-grown;* they will range about, but never without the sound of the mother's call. By this plan, we do away with the necessity of having a turkey-minder. The young ones are not so liable to injury from hawks or vermin as when they follow the hen in her rambles over the plantation, nor are they compelled, in keeping up with the hen, to fatigue themselves more than is good for health.

Great care must be taken to keep water out of the pen; it should be ditched all round, so as to keep it dry; its foundation should be made higher, with dry sand, than

the level around, and the top should be well covered; the ditches nigh the pen should be covered with boards, to keep the young ones from falling in. You may rely on this plan, Mr. Editor. I have seen out of eighty-seven turkeys, eighty-six raised,—one having been mashed by a horse.

Salt, a Manure for Corn.

Mr. Editor,—Every one will recollect the last year as a very unpropitious one. The severe drought almost ruined the growth of this plant. Many experiments were tried during the prevalence of the drought, to counteract its effects, with various success, and I shall state one tried by myself.

During the month of last June, perceiving how much my corn was suffering, and having read that salt was a good means of attracking moisture, I tried the same. Around each hill of corn, I put about a half gill of good Liverpool salt—scattering it well around the plant. In a few days after this application, the corn around which the salt was thus placed began to show an improvement. The leaves assumed a darker green—and a moisture was quite perceptible, where the salt had been scattered. This I attributed to the salt attracting the dews of the night, which, during a drought, almost invariably falls. At every stage, during the season, the corn thus manured appeared better than the other corn around; and when I came to gather in my corn, I found the following result:

The blades were larger and heavier, and the corn more abundant and larger eared than that which had not been salted.

I think after my experiment which was tried on an acre of ground, I may safely recommend a like trial to your readers. I would, however, suggest to them to apply the salt sooner than I applied it; for I believe that by so doing, the corn will be bettered by it.

HOMESPUN.

Cultivation of Water Melons.

Mr. Editor,—This delicious melon may be cultivated for an early market in the following manner:

Select a high and dry soil for the purpose. Plough it up well, and harrow it. Check off the spot thus treated at distances of ten feet each way. Dig out each check with a hoe or spade, and into the same place five or six quarts of cotton seed; or if this cannot be procured, fill the same with stable manure, partly decomposed. Haul over this the earth before dug from the hole, and mix it well with the manure. If you have used cotton seed, in the spring it will have sprouted a week or two after being put into the hole; and must now be killed by chopping up the same well, and mixing it with the soil. This being done, you may now haul up the manure and earth as before directed, into hills; on the top of which you must place about a peck of sand taken from some street or well traveled road. Your hills will be now ready for planting. I should, however, state that the hills must, instead of being made high, be made flat and broad.

Soak your seed over night in milk warm water, and plant out the same the next morning, placing from five to six seed to each hill. The seed must not be covered more than an inch or two under ground. Water the hills for a few days until the seed has sprouted, and then leave the plants to run.

As soon as the plant has got six leaves, take off the centre plant with a sharp penknife, and when the lateral shoots are six inches or a foot long, take off all but three. When the shoots thus left begin to run to the ground, between the hills, stake them down with a small cross stick.

As the vines begin to branch, at every three or four feet, where the vine branches, put a shovel full of rich earth over the same, and press it down lightly with the foot. Wet weather should be selected for this operation, and by so doing the vines will never fail to take where they have been set. The spaces between the hills should be kept free of grass—and by following the above directions, large and fine melons will be produced.

From a quarter acre of land thus treated, more melons will be made than from four times the amount as usually cultivated.

Some persons are in the habit of planting corn between the hills of melons, but I have always found this a bad plan. The corn produces too much shade, and the melons do not ripen well.

If this is of service to any of your readers, will some of them oblige me with some practical observations on the cultivation of slip potatoes.

I am particularly anxious to learn what are the effects of oats stubble listed in as a manure for slips.

Whether pine leaves, rushes or marsh, in an unrotted state, has ever been applied with success, or what other cheap manures may be used?

INQUIRY.

PART II.

SELECTIONS.

Directions for the Management of Silk-Worms through their Hatching and Feeding time, according to the most approved European practice.

[Translated from the French, for the Farmers' Register.]

(CONCLUDED FROM PAGE 95.)

II. *Second Age.*

In arriving at the second age, the worms from five ounces of eggs should occupy a space of seventy-three square feet of the shelves, or thereabout, and the whole space should be covered with paper. The temperature in which they are kept ought to be from 73 to 75 degrees. To change the litter, it is proper that the greater number of the worms should have awakened; and when they come out of the leaves where they were placed, they ought to be changed immediately. When they are unequal in reviving, it is caused by their not having been distributed according to the rate of their developement; from the greater part having eaten continually, while some have remained under the litter, and all the others upon them, and prevented thereby from breathing freely, or were nearly suffocated under the leaves, where they become torpid, when they should have awakened. In short, the inequality of awakening is owing to the differences of vitality, or the decrease of it, into which the worms have been forced by the negligence of those who should have watched over them. The inequality of awakening, may also be attributed to the first hatched worms not having been put in the coolest places of the laboratory, or the latest hatched not being put in the warmest; or by not having increased the growth of the latter by supplementary distributions of leaves, to make them overtake the growth of the earliest ones. From the operation of these causes of inequality, some worms are in a torpid state, while some others are eating, after having awakened, and the slowest still eat because they have not arrived at the torpid state. Also, it is as common to see, upon the same sheet of paper, worms of four different sizes, as it is for the last-comers to perish. It is upon going out of the moulting, that they experience the greatest need of air, and of

mild heat, equally distributed, to hasten the consistence and energy of their organs, and especially of their muzzles, which, now stripped of their first scaly covering are again hardening by contact with the surrounding air.

In the *first day* of the second age, and the sixth from the birth of the worm, there should be provided nine or ten pounds of small twigs of mulberry, as tender as possible, and as many fresh leaves, cut small, after being cleaned and picked over.* Also, all the preparations should be made for changing or removing the worms, in order to clean the first sheets of paper upon which they were kept. When they are perceived to be generally awakened, that they agitate their heads, or hold them elevated, as if searching for something, and when some of them have wandered from the litter, the removal should be commenced with those which show most motion. For this purpose, the small mulberry branches, with their leaves, are laid over the papers of worms, with spaces, (one or two inches wide,) left between. Very soon these boughs are covered with worms; then, by means of small moveable boards, very smooth and even, the little branches of mulberry may be changed with the worms on them; and, instead of keeping them as before, in squares, there are placed bands, (or moveable dividing strips of wood,) across the shelf, and are disposed in such manner, that there is nothing to do but to enlarge the two sides of the compartment, (by moving outward the bands, or sliding strips,) whenever there is need of more room; for, at first, the worms ought not to occupy but the half of the space in each small compartment, which is intended for them afterwards.

By means of the little tables, or boards of transport, which are rested with the long side upon the hurdles or shelves, and inclining them, the little branches on them, with their burden of worms, are gently slided off upon the shelves, where they must be arranged in proper order by the hands. Whenever there are seen a few more revived worms, left still upon the old litter, more of the little branches are put there, to gather up and remove the worms, as the preceding, to the leaves disposed for them—which must be counted as one distribution; for, in a very short time, there will be nothing of them remaining. The contact of warm air is then sufficient to develope their jaws, enfeebled by the moulting; and far from being inclined to remain upon the litter, where they were, they are seen grouped upon the little branches which have served for their removal, and adhering so closely as to remain heaped together. For the purpose of changing the place of silk-worms, at all times, this is the best method to follow.

One or two hours after the worms have been removed and placed upon the shelves, there should be distributed to them three pounds of leaves, cut small, as before. In the cases where the worms, though crowded upon the stripped branches, may leave vacant intervals

* It is obviously an important saving of trouble to pick over the leaves carefully, before chopping them, and to remove all dead leaves, and other parts, or foreign matters, which are unfit for food. For even if none of these matters are otherwise hurtful to the worms, their presence will prevent the quantity of food given by weight being accurately estimated, and moreover will serve greatly to increase the mass of litter and filth, and will cause more labor to separate it from the worms, when removed at last, than would be required to avoid distributing them with the clean leaves at first.----Tr.

between them, there should be placed on these intervals other leaves, so as to make them extend themselves, and occupy the whole space designed for them, after this first repast. The two others, for this day, are to be given at intervals of six hours from one another.

The removal of the worms to the other shelves, being finished, the first sheets of paper which they occupied must be rolled up, to be carried out of the laboratory. For what remains on them is only excremenial matter, and the cast skins, mingled with the remains of the leaves fed on since the birth of the worms. Out of thirty pounds of leaves given, it may be counted on that twenty-two and a half will have been completely digested.

In the *second day*, there should be given thirty pounds of cut leaves, to be divided into four portions, and given at intervals of six hours. The two last distributions should be rather larger than the first. The enclosing strips should be enlarged, and moved to the compartments this evening, so as to permit two-thirds of the whole space to be completely occupied. The worm is now of a clear white color; its head is a little larger. They are dispersed, as has been said, by taking them upon little branches, to bear them to the places where there are too few. It is very important that they should be equally spread over the surface.

In the *third day*, the two first meals should be more abundant. There should be used for this day thirty-three pounds of leaves, cut small, taking care to proportion them according to the wants of the worms. For, towards the end of this day, not only does their appetite lessen, but again they hold the head high, they cease to eat, and fall into a marked state of torpor. Their spaces are again enlarged, so that they now have four-fifths of the whole.

In the *fourth day*, there should be distributed to the worms only nine pounds of leaves, picked, cleaned and cut, observing always, to divide them equally and lightly. When once completely torpid, it is not until the next day, and after the termination of their second casting off their skins, that they will awaken. Then their second age will be entirely completed. In calculating their consumption of ninety pounds of cut leaves and little branches, with what remains of the litter, it is seen that it required twenty-one pounds to feed each ounce of worms, considered separately. During this second period, the worms are become of a clear gray color; the hairs are so shortened as to be seen with difficulty; the muzzle, which had been black, has whitened; and, immediately after the moulting, is soft, soon to retake its first form and first color. It hardens even according as it makes progress, and according to the need of having food a little more solid. Upon the back are seen two curved lines, opposite to each other. The worm has grown in length two lines, and already it has need of a much greater quantity of air to respire at its ease. Its respiration, greatly increased, exacts a more frequent renewal of the air, either by opening the windows when the outer air is mild, or by opening the door, or the smaller opening made in the door, and until the thermometer shall have sunk two degrees.

III. *Third age.*

For the *first day*, the preparation for feeding should consist of fifteen pounds of clean-picked and fresh leaves, less cut than the preceding, to which should be added as much in weight of small branches. The

worms of five ounces of eggs will now occupy 174 feet of the shelves, which should, as before, be covered with paper. They will be kept in a temperature ranging from 71 to 73 degrees. They must not be changed to new places until it is seen that they have almost all come out of their torpid state, (which usually takes place in twenty-four or thirty hours at most,) by a movement of turning which they make with the head. Agitating the air cannot hurt them, though, when breathed upon, they seem to experience a disagreeable sensation. To remove them, after this moulting, there should be used the same procedure and precaution as before. If the spaces which silk-worms should occupy, in their different ages, are correctly calculated, there will be nothing more easy than to lift them, to clean them, and to dispose them anew upon hurdles or frames, where they are left until they have completed their moulting, at a sufficient distance from each other. They eat now with the greatest facility. Their litter cannot injure them in any manner. Their first repast will consist of the fifteen pounds of little branches, with all the leaves growing on them, which, when eaten, will be replaced by seven or eight pounds of other leaves, equally distributed by means of the broom. The most essential point, then, for him who is charged with the care of silk-worms, is to distribute them equally upon the shelves, or the hurdles, as well as to watch over the just distribution of the leaves with which he feeds them; for to furnish too great a quantity would be an absolute loss, and the excess would serve but to augment the litter, which would lead to its certain fermentation, and might be the occasional cause of many diseases.

This day will be terminated by a distribution of seven pounds of leaves. Or if they should not be wanting, they should be kept to add to the supply for the next day.

It may take an hour, or two at most, to change the worms which are to cover 174 feet of shelves or frames. Always, as soon as possible, after removing the worms, the litter should be rolled up with the paper, and carried out. Before getting rid of the litter, search should be made in it whether there may not remain there some torpid worms, which the contact of the open air will reanimate much sooner than that of the laboratory; and after having placed them upon some little branches, they should be brought back to the others. As to these last roused, they should be kept on separate shelves, in the warmest parts of the laboratory, and allowed plenty of room.

From this time, the consumption of the worms is very great. To give them the leaves easily, there should be provided square baskets, shallow and wide, with handles, by which they can be suspended on hooks, any where, and may be emptied, using both the hands together, of the leaves which they contain, to be distributed at will, whether at the height of the individual, or upon the more elevated shelves, by aid of little stools, or very light ladders. When the worms shall have eaten three or four of these meals, it will be perceived that their size is sensibly increased, that the color is brighter, and, at the same time, that the muzzle is lengthened.

On the *second day*, there must be provided ninety pounds of picked and cut leaves, of which the two first meals will be smaller than the two last, because, that by the evening the appetite of the worms is increased. The space occupied by them also should still be enlarged gradually.

On the *third day*, there must be distributed to the worms seven pounds of cut leaves more than the quantity of the previous day; observing to give the greatest shares at the two first meals. The distribution of food, for the evening, ought to be less, because the worms are then losing their appetite. They have now grown much in size, are becoming white and transparent, their heads are lengthened, and the circumvolutions which they make with it, precede the moment when they are going to become torpid again.

On the *fourth day*, the food will be only fifty-two pounds of leaves, because the appetite of the worms is much less. The greater number are already torpid. The share for the first meal should be the largest, and for the last, much less. The leaves should not be spread but in the places where they are needed, and the want of them is perceived. In case there are found on the same shelf some which still require food, there need be no fear to give it to them, that they may more quickly reach the state of the others. Excellent effects are obtained from these intermediate meals.

For the *fifth day*, the distribution of cut leaves should be only twenty-seven pounds in all, and shared only to the places where it is seen that food is wanted. Since the day before, there may be seen throughout some of the foam or slaver of silk, which the worms have rejected. They are seen now to seek to go to their sleep, in free air, in the dry places, and holding the head continually raised; and those which are compelled to remain on the litter, elevate their heads above it, maintaining the same position. At the instant when they are passing into their state of momentary torpor, they evacuate all that they have within their bodies; the intestinal canal is then distented by a lymphatic fluid, yellowish and transparent; the outer skin becomes wrinkled and dry before being cast off. During all the time of the moulting it is necessary to agitate and renew the air of the laboratory, taking care to keep the temperature at the previous degree of elevation.

On the *sixth day*, the great number of worms are disposed to revive from their torpor. Their third age is now completed. They have passed through it in the space of six days, consuming three hundred pounds of leaves and small branches, which is nearly sixty-nine pounds to the ounce of eggs. Their muzzle is lengthened and jutting out; from black, which it was before, it has become of a reddish gray; the head, the body, have sensibly increased in size: the body is covered with wrinkles as well as the head, and the skin no longer appears hairy. The general color borders upon yellow orange. All their feet towards the posterior end being developed, permits the worms to cling strongly to whatever they touch and eat. There is even heard a slight sound, which they make in moving from one place to another, which ceases when they fix themselves, and which becomes more strong as they grow older. Since the second moulting, the worms have gained six lines in length, and have increased their weight fourfold.

IV. *Fourth age.*

The space which the worms should now occupy is of 412 square feet, and the temperature required for them is from 68 to 71 degrees; and even should it rise to 73 degrees, or higher, there will be no danger, provided the air be renewed from time to time, by opening the doors and window, (keeping closed the Venitian blinds.) By this

means, the litter is almost always moist, is hindered from entering into fermentation, and disengaging exhalations which would be extremely injurious to the worms. Many times entire broods have perished for want of such precautions being taken.

The hurdles should not be changed until almost all the worms have got over their torpor. Those first revived should be put in the places the least hot, and the last where the temperature is highest. The thermometer will easily direct to the proper places for both. These attentions are even indispensable, when it is required to make the worms climb (to begin their cocoons,) all at one time.

The third moulting being thus ended, the worms should be removed that they may no more be disturbed, to the great laboratory; where they should have, that they may be at ease, 920 square feet of surface on the shelves, whether in one large apartment, or in several smaller, but contiguous, for the greater quickness and ease of the services to be performed. However, as at coming out of the third age, they did not occupy but 459 square feet, it is necessary to mark off the spaces in advance, and fix them by proper bands, or strips, which may be moved to enlarge the spaces gradually, and at will. There result from this arrangement, essential in every rearing of silk worms. 1st, that the litter, (which it is not necessary should be taken away in the fourth age,) increases insensibly, and as it has very little thickness, there is disengaged from it no marked or hurtful odor; 2d, by such thin scattering of the leaves, it results that they are more equally eaten; they have no time to fade, and still less to be spoiled; 3d, that the worms, being suitably dispersed, eat much better, and at their ease; it is much easier for them to move themselves; and their perspiration, as well as their breathing, is performed in a manner which is extremely beneficial.

For the *first day*, which is the sixteenth of their existence, there should be provided for the worms thirty-eight pounds of small branches, and sixty pounds of leaves cut only to about half sizes, by the cutting-machine. When it is necessary to remove the worms, there should be spread some of the little branches of mulberry over two hurdles only at a time; and when these are filled and covered with worms, they are transported on the boards as before. The little branches may be substituted by numbers of the whole leaves tied together by their foot-stalks, to be spread out to receive the worms, and to be lifted and moved when filled with them. Two persons being charged with this part of the operation, and two others conveying the boards with the loaded boughs, or bunches of leaves, as quickly as possible to the places destined for the worms, will soon effect the removal. If there remain some which are still torpid, they must be collected and put in a separate place.

There are then distributed to the whole number thirty pounds of leaves, all along the bands, in strips, which are kept still at some width. The scattered leaves are gathered to the places where they are wanted, by the little broom. Soon all the silk-worms are disposed equally over the frames; and if the leaves are still cut for them for three or four more days, it is to induce them to eat quicker, by the leaves exhaling a stronger smell, and presenting many more surfaces to the mouths of the worms. The second meal being ended towards evening, when it is entirely consumed, the worms become whiter, have much more strength and vigor, and their movements are more marked.

For the *second day*, there will be used 165 pounds of leaves, still cut, though but slightly. Of this, the three first meals will be moderate, and the last ample. The space which the worms occupy is gradually enlarged, as they now increase in size rapidly. At the same time they take a much whiter color.

For the *third day*, there should be given in the four meals 225 pounds of leaves, cleaned and cut into large pieces. The quantities for the two last meals should be much greater than the two first.

On the *fourth day*, there should be fed 255 pounds of leaves. The three first shares should be about seventy pounds each, and the last, forty-five. Towards the close of the day, the silk-worms are about eighteen lines in length, and they are still whiter than on the preceding day.

On the *fifth day*, as the hunger of the worms will have sensibly lessened, 120 pounds of leaves, slightly cut, will be enough. The first distribution will be the most considerable. The worms almost all become still or torpid. The other distributions of leaves should be made only on the places where worms, not yet torpid, are seen. Generally they have increased in length two lines more.

For the *sixth day*, no more will be required for feeding than thirty-five pounds of leaves divided and given according as the want of them is perceived. By the evening, the worms will have evacuated; they are become much smaller; the green color has disappeared; they are covered with wrinkles which are scarcely visible.

In the *seventh day*, the silk-worms accomplish their fourth moulting, and come out of the torpid state. During the last seven days they have increased in length six lines. They are now of a grayish and reddish color, deeply tinged, and their augmented weight is quite visible. During all the time of this age, it is absolutely necessary that the air of the laboratory should be kept in a state of continual purity. Thus it must be renewed as often as is found necessary, either by opening the doors, the windows, the air-holes, or the ventilators, whenever the outer temperature is nearly the same with that of the laboratory; and, in the contrary case, by making fires in the chimneys with very dry combustible matters. The purity of the air, in which the worms are continually kept, is of the first necessity, to maintain their existence in a state of sustained vigor, and to prevent the contracting of diseases. The persons occupied in attending to the worms ought also not to suffer any disagreeable sensations in breathing the air of the laboratory; and if they experience any such sensation, or affection troublesome to the organs of the chest, however little it may be, they should immediately use all the means at their disposal to renew the air which surrounds them.

V. *Fifth age.*

In the *first day* of the fifth age, which is the twenty-third of the life of the silk-worms, their fourth moulting is finished, and almost all are again aroused from their torpor. They ought now to be kept at a temperature of 68 to 71 degrees. Spread out upon 918 square feet of the shelves by a sufficient number of persons, this operation ought to be completed in eight hours at most. The first distribution which is necessary to them, amounts to ninety pounds of small branches, or whole leaves, and as much of others, but after having been cleaned.

The branches must be spread out upon four or five hurdles. As soon as covered with the worms, the branches are carried to other frames, in the middle of each of which there is left a vacant interval of more than half the size of the frame. The frames from which the worms are thus removed, are then cleaned; and all the worms which may be still torpid, and left on them, are to be collected together, as directed formerly, upon separate shelves, in the warmest part of the laboratory, and taken such special care of, that they may arrive at the latter conditions in the same time with the others.

If attention has been paid in first placing the worms on half of the shelves—if the interval in the middle of the hurdles has been well preserved—in two changes, all the worms will be found equally distributed through all the interior of the laboratory, and in a suitable manner. The leaves of the branches used will have served for one of the meals; what remains of the leaves and other branches will be given after an interval of six hours, taking care to bring together with the little broom all the leaves too much scattered, and to disperse the worms which may be too much clustered together, into places where there is space to spare. At the last meal, which will be of but forty-five pounds of leaves, the boards should be again moved, to allow more space to the worms. All will then appear to enjoy a degree of vigor sufficiently well marked. Fresh air should be given by the windows, if the outer temperature should be nearly equal to that of the laboratory, and especially while the cleaning is done. Slight attention to the thermometer and hygrometer will serve to show what changes may be made in the air.*

In the *second day*, the spaces should be again enlarged, and there should be given to the worms, 270 pounds of clean leaves, divided in the following manner: fifty-two pounds for the first meal, and ninety-seven for the last; (the balance of 121 pounds, for the two middle repasts.) It is plainly seen, towards the end of the day, that the worms are much whiter than the day before, and that they are rapidly tending to their further developement.

On the *third day*, there should be spread over the worms, which are now very voracious, 420 pounds of clean leaves. The first meal will be of seventy-seven pounds; the second and third, of more than 100 pounds each; and the fourth will take 120 pounds. It is very certain that they can eat much more; but the quantity indicated here has always appeared sufficient to keep them vigorous, when care is taken to continue to manage the bands, and enlarge the spaces in proportion to the increase of food. The worms are now twenty-six and twenty-eight lines in length, and their whiteness is also much increased.

*A hygrometer is any instrument for measuring or comparing the different degrees of moisture in the atmosphere. If no better can be conveniently provided, a very simple but sufficient one may be made with a long twine suspended from one fixed end in the laboratory, and having a weight at the other end, to keep it well stretched. The length of the string will contract in proportion to the degree of moisture in the surrounding air, and extend in proportion to the dryness; and the changes will be readily shown in a graduated scale, along-side or over which the weight will rise or sink, as the string contracts or expands in length. As the amount of variation will be in proportion to the length of the string, and, of course, the size of the degrees, marked on the scale, and the accuracy of the scale, the length may be made as great as desired, and yet the whole kept within convenient limits, by passing the string backwards and forwards, and horizontally, over the rollers of sundry small pully-wheels, which will yield freely to the slightest impulse of the string.—Tr.

On the *fourth day*, the quantity of leaves to be given should still be increased. The first meal will be of 120 pounds, the two following of 135 each, and the last of 150. The appetite of the worms are still greater, and they have, in very little time, reached a length of about three inches. They consequently require much food, and there is nothing to be feared in giving to them the 540 pounds of leaves.

On the *fifth day*, the provision of leaves ought to be augmented to 810 pounds; of which the first distribution will be 150 pounds, the last 210, and the two intermediate meals, 220 and 230 pounds of leaves. It is also often of necessity to make some partial distribution of leaves, in the intervals of time between the greater, especially in places where it is perceived that otherwise the worms would be too long without food. If the frames need clearing, it should be done at the close of this day, or early in the next, in not distributing the leaves but upon four frames at once. But as the worms are no more to be changed, or moved away from the frames they occupy, the following method for clearing will be followed. In a little time after the leaves are spread, and as soon as they are covered with the worms, they are taken and placed as quickly as possible upon the little tables, or moveable boards, used for transporting, which are leaned for that purpose on the edges of the frames. The litter is then immediately taken up from the frames, and thrown into the baskets. This done, the worms are replaced as before on the frames; and so on, successively, with all the frames to the end.

With whatever quickness the litter may be changed, the operation is always too long; and, therefore, it is necessary to feed the worms first cleaned, so as to leave no interval, and that the meals may be shared equally between the last and the others. The manager must look well to the state of the interior of the laboratory, in respect to humidity, to the atmospheric heat, and to the state of the air which is contained, in order that the worms may be preserved in their condition of vigor acquired by the progress of age. It is scarcely necessary to say that the litter heaped in the baskets should be carried out of the house immediately; and that in the handlings required for changing the leaves covered with the worms, great care should be taken not to hurt or wound the worms with the fingers.

On the *sixth day*, without being an eye-witness to the circumstances, it is scarcely possible to have a correct conception of the voracity with which the worm seizes on every thing presented to it. It even attaches itself to the fruit of the mulberry tree, which by chance are left among the leaves. This day, there will be distributed in four times, 975 pounds of leaves. The last meal should be much the largest share of the four. It must not be forgotten to add more leaves in all the places where the worms appear to need them, between the times of the regular meals, in the prolonging of which the worms now gnaw and tear all that is given to them. They are now three inches long; and if they are very white, soft to the touch, and of a velvet smoothness, they may be considered in the most perfect health.

The *seventh day* is that in which the worms complete the greatest length which they can acquire, and arrive at their full weight. If no more than six worms are required generally to weigh an ounce, they are then in their highest state of vigor. There will be distributed to them, in meals decreasing in quantity from the first to the last, nearly

900 pounds of leaves; and giving intermediate supplies, if required by circumstances. Towards the evening, their extremity, which had been white, assumes a yellowish color; it is said then that the worms are "*ripening*." Their mastication perceptibly lessens; it is the same of their weight, and of their length; they discharge a considerable quantity of excrement; there is a continual exhalation and evaporation rising from their bodies; and if they have, in about seven days, doubled their length, they are now going to decrease as fast.

On the *eighth day*, as the appetite of worms is much lessened, there will be need of no more provision than 660 pounds of leaves, which should be chosen as good as possible, and from the oldest trees. The first share should be the largest, say 200 pounds, and the following meals be lessened successively. And that the worms may ripen together, still, as before, some intermediate distributions should be made, wherever they are seen to be needed. The yellow color of the worm now extends from one ring to another; they become shining; are no more greenish; they diminish perceptibly in bulk; they seek the edges of the hurdles to evacuate all that ought to be discharged from their bowels. In proportion as it is perceived that they approach maturity, and, especially, if there is too much moisture, the litter should be removed as quickly as possible. Strict attention must be paid to the state of the atmosphere in the laboratory, and to the removal or correction of every thing that can be injurious in any manner to the worms.

On the *ninth day*, the thirty-first since the birth of the worms, the provision of leaves will be only 435 pounds, to be distributed throughout, and wherever there is more special want. The worms are becoming more yellow, the surface on the back is more shining, the rings are orange, the muzzle is more clear. Currents of air, and exposure to sudden changes of temperature must be guarded against; though it may seem that the healthy and vigorous worms may suffer no remarkable inconvenience, even if exposed to considerable inclemency of the weather.

The worms, from their hatching to this time, have grown to forty times their first length, and, in a month, have increased to nine thousand times more weight than they were when just come forth from the egg. The most active period of their short life is the space of nine days comprised within the fifth age. There is yet, however, need for great watchfulness over the worms, that they may arrive safely at perfect maturity, which will not be until they throw off the skin that now covers them and change to the *chrysalis* form, losing, at the same time, half the bulk and weight of their bodies. The transverse bands reappear upon their backs, and the skaly prolongation of the muzzle becomes blackish, brilliant, and very strong. Their whiteness is much more decided than it has been before; and to the touch, they have the firmness of flesh, as well as velvet softness, especially when healthy and vigorous. At this time the worms should be kept not only in a warm enough temperature, but in air continually renewed, if for no other purpose than to favor the evaporation and aid the removal of the perspiratory fluids, which are transuding from the worms continually, during the last part of their existence in this form.

In the last period of the fifth age, for the formation and perfect completion of the cocoons by the uninterrupted spinning of the silk, until the moment when the worm becomes a chrysalis, it is necessary that

the silk-worm should have its body composed of but two substances, the one the silk material, and the other purely of animal matter; and that the intestinal canal should be evacuated of all the excremental matter which it contained. It is therefore necessary to keep the worms in the most perfect state of cleanliness, and also to continue to give them leaves at the same time, not only to finish this day, but still to wait some twenty-four hours more for their maturity to be fully completed; which will be known by the following signs:

On the *tenth day*, the thirty-second from their hatching, when fresh leaves are given to the worms, if they climb upon them and do not eat—if they keep the neck stretched and the head raised, as if searching for something—if they are transparent, and of a fine yellow color; when they raise themselves upon the hurdles where they were supported, crawling slowly, and when they reach the edges, endeavor to go farther—when their rings disappear, and their greenish hue is entirely changed to orange-yellow, the neck becomes wrinkled, and all the body becomes soft—finally, if in placing one of the worms in the hollow of the hand, and looking at it facing the light, it is perceived that the light shows through it—then immediately every thing should be disposed to favor the immediate climbing of the worm, for the purpose of their beginning to spin their cocoons, lest any fruitless efforts in searching for places to spin, may exhaust some of their silk.

Cob-Meal and Cob-Mills.

[FROM THE FARMER AND GARDENER.]

A friend and correspondent in Ohio has requested some information as to the value of cobs ground with the corn, and the cheapest and best mill for grinding them together.

That a very great saving is effected in feeding animals by grinding their food does not admit of a doubt; and the explanation of the fact, as given by Raspail and Dutrochet, is perfectly satisfactory. It is also certain that when nutritive matter is properly divided and incorporated with some substance suitable for the action and distention of the stomach, that a much less quantity will suffice, and the animal be in equally good condition.

It is on this principle that the English custom of substituting cut straw for hay in feeding with grain, a saving of one-half of the expense being made by feeding with cut straw and ground grain, over feeding with hay and unground grain, according to the old mode. Neither the straw or the cob contain any great amount of nutriment in themselves, but they assist the digestive functions, and render the accompanying nutriment more available. The cob, however, has much the advantage of straw in every respect; and experience shows that those lose much who waste this important part of the corn crop.

Some interesting experiments have been recorded in the N. England Farmer, on the subject of fattening animals on corn and cob-meal. The Rev. Mr. Parley, in describing his method of using the food, says:—

"I have for several years practised having my corn and cobs ground together; breaking the cobs fine by pounding, and grinding one peck of corn with a bushel of the cobs. Meal made of this composition, I

scalded, and made about as thick as common hasty pudding, or mixed about one peck of the meal with about three pecks of boiled potatoes, thickened to the consistency of pudding. There were no hogs in the neighborhood grew so fast, or were fit to kill sooner in autumn."

In the Massachusetts Agricultural Repository is a communication from Mr. Rice of Shrewsbury, in which he says:

"The very best provender I have ever used for fattening cattle, is corn and cobs, ground together. The reason I consider the cob useful is, it swells in the creature, and keeps him in good order; in no one instance since I have fed with this meal, have my cattle been out of order by being cloyed, or scouring; they are at all times regular; but when I formerly fed with clear Indian, or oats and Indian, these difficulties frequently occurred, and they would lose as much in two or three days as they would gain in a week. The second year that I made use of this kind of provender, I thought I would try an experiment, by feeding one ox with corn and oats ground, the other with corn and cobs, having one yoke oxen so equally matched that no one who viewed them, appeared satisfied which was best. The cob is computed to make a little more than one-third, therefore I mixed the other with one-third oats, which was my former mode. I gave each ox an equal quantity at a time, except that the one which had corn and oats some days became dainty, and would not eat his allowance; while the one fed with cob-meal kept on his regular course. When taken to market and slaughtered, the oxen weighed twenty-eight hundred and a half, the one fed on corn and oats had 162 lbs. of tallow, and weighed about half a hundred more. The one fed on cob-meal had 163 lbs. of tallow, and the butcher pronounced his meat half a dollar in the hundred better than that of the other."

In the third vol. of the Philadelphia Society for promoting Agriculture, is an excellent paper by Dr. Mease, in which the utility of grinding the cobs with the corn is clearly shown, both from analogy and actual experiment. And we believe that wherever it has been tried, or wherever the means of grinding can be had, it has been approved, and will be found of great value.

So far as we are acquainted, cobs after being broken, are ground in the common millstones with the corn. The same machinery used for grinding plaster of paris or gypsum, has been found efficacious for grinding cob-meal; the plaster cracker reducing the cob sufficiently for the action of the stones. Mr. Buckminster, speaking of machinery for this purpose, says,—"for making cob-meal we placed in our mill a pair of large stones, cut the eye of the runner twelve inches at top, and fourteen or fifteen inches at bottom, and bosomed it out large, as we term it. In this manner it answers every purpose for grinding and cracking corn in the ear."

The cast iron bark mill has been used for cracking cobs to some extent, and where a mill is convenient to grind the cobs and corn after cracking, would answer a good purpose; and we can see no reason why one constructed on the same principle, and like those worked by a horse or water power, might not be constructed to reduce the cobs and corn sufficiently fine to answer instead of the ordinary process of grinding. It must be remembered, however, that the goodness of cob-meal must always in a great measure be dependent on its fineness. Where it is an object to provide a mill of this kind, any farmer who has a horse-power thrashing machine, may with little

expense procure ordinary millstones, and by attaching a cracker as for a plaster mill, or arranging the stones themselves as recommended by Mr. Buckminster, have a mill not only useful for grinding cobs but all the grain he intends for feeding. As the power required would be lessened as the velocity was decreased, two horses would run a pair of millstones, it is believed, with as much ease as four do the larger thrashing machines.

Materials for Manure.

[FROM THE NEW-ENGLAND FARMER.]

We have spoken of various sources and means of accumulation and manufacture in regard to manures; the barn cellar, the hog sty, the privy, the compost heap, the wash tubs, the sink; in respect to all these matters we have made suggestions, which we hope will be taken in good part by the farmers; and which we are persuaded, if properly attended to, will result in accumulations of valuable manure little dreamt of, when the foundation of the heap was laid, and the first contributions brought to it. The sailors tell us of extensive islands, holding a large population and feasting them in plenty, and reefs stretching themselves for miles in the ocean, and columns of coral rising from the very depths of the sea to its surface, and if the sea could be for a time withdrawn, and their vast height and proportions disclosed to the eye they would be seen casting into the shade even the mighty pyramids of Egypt and the proudest trophies of human art and labor; and all these were the result of the combined and unintermitted toil of very small insects, laboring constantly at these erections by the gradual deposits of minute atoms. These mighty masses show what can be effected by persevering labor, even with most humble instruments and means. The termites or ants of Africa erect large cabins, which, spread out upon extensive plains, look like a vast military encampment. We see constantly upon our own pitch-pine plains, those heaps which the common pismires accumulate; and observe that all this is the product of single atoms brought by single individuals of those minute animals, thousands of whom we destroy at a single footstep. Every part of creation illustrates the extraordinary, immense, and triumphant results of persevering labor. Many of the largest fortunes that have ever been accumulated have arisen from minute savings and deposits.

We hope our illustrations of this homely subject will not be deemed too ambiguous. We should be glad to make them as striking and memorable as possible; and we care little for the source whence they are drawn, provided only we can induce the farmers to gather every thing, and to save every thing which comes in their way, by which the means of enriching their farms may be created or extended. We reiterate the great position, that almost every farm, certainly where its products are consumed on the place, contains the means of maintaining and extending its fertility. Every traveller who visits China, reports the extraordinary condition of the Chinese cultivation, and concludes by stating that the most remarkable and particular attention is paid to the saving of manure. If gold dust, if corn itself were sprinkled in their streets, they could not be more careful in picking it

up and collecting it together, than they are in picking up and collecting whatever may go to the increase of their manure heap.

It is in this matter our farmers fail, perhaps more than in any thing else connected with our agriculture; and this is a failure most essentially affecting their interests. If we would have an improved agriculture, a revolution in our habits must take place here; and when this is effected, and all the manure is provided and prepared, which we can provide and prepare, we have accomplished, comparatively, half the work. The getting of manure on a farm must be as much matter of study, care, and labor as the getting of crops from that farm.

We are of opinion that on every considerable farm there should be a man employed with a cart and horse or yoke of oxen, whose sole and exclusive business it should be, excepting in some extraordinary emergency, to collect the materials for manure; and to put them in the way of being manufactured. It is not enough for the farmer to say he will do this at his leisure; this shall be the business of odd times; he will attend to this when nothing else presses upon him. It must be a specific, constant, principal object of study and labor. Remember again that every vegetable substance, and every animal substance, is capable of being converted into a manure.

Now we will look out of the window where we are sitting, and see what in hasty glance comes within our sight, which ought to be saved. There is the garden, with an abundance of weeds and decayed vegetables; collect all them, and let them go into the hogs' pen or the barn cellar. There is the pasture, where bramble bushes, sweet fern, Canada thistles, alder bushes, brakes, &c. abound. Gather them, and you will at the same time clean your pastures. There is the road lined for miles with all sorts of weeds and coarse grasses; get them. There is many a mud hole, which receives the washings of the streets, and where a great deal of valuable and rich manure has been collected; empty that. There is a large shade tree, where the cattle daily collect, and where their droppings are accumulated; collect these and them in the common heap. There is many a rich spot by the side of the roads, which, without any prejudice to your neighbor or the public, you can plough up; take off the mould, and carry that likewise into your manure yard. There is the refuse of the shoe shop, scraps of leather, &c., collect them and lay them on your land to be ploughed in. There is a clay pit; occasionally get a load or two of that and throw into your barn yard. It will greatly improve the composition. Then you have a wood or grove at hand; collect the leaves from that and lay them in store for littering your cattle-stalls and your sties. But you have a bog meadow, here then is an abundant supply of the material for enriching your fields. Collect this mud; it is full of the most enriching substances. They may be spread, with great advantage, upon your grass lands; but they are still better placed upon your compost heap.

We have seen an excellent arrangement on the part of two or three farmers for saving manure, and especially the liquid portions. They daily spread the back part of their cow stables with mould or sand, of which, both in winter and summer they keep a sufficient supply at hand under cover; and using this without covering, or covering it with litter, great amount of the most valuable manure is saved.

We have thrown out these hints, not thinking to treat the subject fully, or philosophically; but rather with a view to put other minds

to considering what can and what ought to be done. In new countries, where the accumulations of vegetable matter have been gathering for centuries, and have remained on the surface untouched, there is no occasion at present for the use of any manures. The soil is already full and needs rather to be exhausted than replenished. But it is not so with our old soils. We cannot get along without manure. The *geine*, the vegetable pabulum, must be supplied. We have, as Dr. Dana says, the plates, but they require to be filled. We might sit down to a table covered with the richest porcelain or burnished and embossed gold; but if the dishes are empty, we should starve as certainly at such a table as at a naked board. Dr. Dana is likewise of an opinion, in which Professor Hitchcock concurs, that the earthy constituents of the soil are matters of comparatively little moment, provided always of course that they exist in commixture, and are sufficiently retentive of moisture. That is, to recur to the former illustration, it is of little or no comparative importance what the plates are made of, or whether the table at which we sit down be plain deal, oaken, or mahogany; the main point is the food which is placed upon it. This appears constantly. In our disdained and hard soil, crops are occasionally produced, which vie with any thing which even the fertile alluvions of the west display. One hundred and thirty bushels of corn were raised upon an acre in Plymouth county. Forty bushels of rye, ninety-six bushels of oats, fifty-five bushels of wheat, one thousand bushels of carrots, more than nine hundred bushels of ruta baga, seven hundred bushels of potatoes, and more than four tons of hay have been raised upon an acre even in our own granite soil. The incredulous may sneer at this; that does not at all affect the facts. It neither makes, nor unmakes, nor alters them. They are established by full and incontrovertible evidence. This, however, has been done by liberal cultivation, liberal manuring, applied with sound judgment, at proper times and in a proper form.

The collection of this manure and its application to the soil and crop is, we admit, laborious, and requires incessant care and diligence. In this respect the new countries have immense advantages over us: and when we compare our severe and expensive cultivation, with their little expense and abundant returns, we are often half disposed to pull up our boots and put on our hat and gloves. But then we come back to the great established position, that agriculture in almost any part of New-England, having ordinary advantages, where, conducted with skill, judgment, and frugality, affords an ample remuneration for all the toil and all the expense incurred; and when we recollect the multiplied social advantages which our community presents over every new country, and take another deep draft of its invigorating mountain breezes, we throw aside our gloves and put on our frock again, and whistle to our team to go ahead.

Swine.

[FROM THE MAINE FARMER.]

Mr. Holmes,—In no part of the United States can the raising of pork be made a more profitable business than in the state of Maine. In making calculations of the profits of swine husbandry, we should

take many subjects into consideration. First of all, let us notice manure—always acknowledged to be the basis of all good husbandry. I have heard it asserted that many of the farmers of Massachusetts say that the manure of a hog will make, when well supplied with materials, will pay all the expense of his keeping. If this supposition is correct, then we can raise pork as cheap as our southern or western brethren, whose swine subsist and fatten on what grows spontaneously.

Every farmer should have his hog pens and his hog yards so modeled that no manure be lost. If the hog yard is upon descending ground, it should be so contrived by digging, that none of its virtues may escape in a liquid state; and if the liquid part of the manure in the hog pen escapes through the floor, it is an unpardonable waste, unless the farmer should cart an abundance of loam and put it beneath the floor of his hog sty, to absorb those rich juices which are annually lost, if he cannot devise a better method.

Every farmer in the State should be ambitious to obtain the very best breed of swine that can be procured. A poor breed of swine, or in fact any kind of animals, is a dead loss upon the community. Nothing is wanting but a little energy, and a union of efforts, to get rid of all unprofitable stock and substitute in its stead that which will be highly profitable.

It has been said, that in order to raise swine, it is necessary that the farmer should have a large dairy; but I do not think this absolutely necessary. A farmer who has not large quantities of milk to spare for his pigs, may give them other kinds of nutritions food: and probably they may be made to thrive well in a clover pasture, without much other food.

Now let us notice the method of management practised by Arthur Young, Esq., of Great Britain, in the management of swine. It is said that in the summer of the year 1766, he pastured sixty-four swine on only two acres of clover ground. He assures the public that all these swine grew very fast, and also gives it as his opinion, that this use of clover is much more profitable than when converted into hay. Now, why cannot we, by practising the same method, realize the same results? Dr. Dean says that it is an exeellent piece of husbandry to make a hog pasture of an orchard; and he tells us that an orchard may be prepared with clover as well as any other spot of ground.

I think it is bad husbandry to put apple trees upon good tillage lands. If the farmer has stony ground, that is not easily tilled, there he should plant his orchard. The grass in orchards (especially if the trees be large and stand near each other) is not so sweet and nutritious as that which grows on ground unencumbered with trees; still I think, for many reasons, swine should run in orchards. If the trees in an orchard be too large or too thick to admit of tillage, the little patches between the trees may be ploughed as often as necessary, and sowed with fresh clover seed: to sow a few oats is also a good idea. The farmer need not plough his whole orchard at once, but may plough a part every year—by so doing he may constantly improve the soil at a very light expense.

If it be admitted that hogs should run in orchards, still I think that every farmer who would raise a considerable number of swine, should set apart at least one acre of land adjoining his orchard, for the purpose of cultivating clover for his swine.

This acre should be kept one half in tillage and the other half in clover, alternately; and as clover is a biennial plant, is best to change from grass to tillage every second year; thus affording a constant supply of fresh clover. By so doing, hogs will not be compelled to feed wholly upon grass growing in orchards. And last, not least, by pasturing land with swine, and sowing clover seed abundantly, the farmer may enrich his soil in an eminent degree.

The winter food for swine should be principally roots, which should be boiled or steam-boiled. This is winter work, and the farmer cannot be more profitably employed. If potatoes are boiled, the water should be immediately drained off. The water in which potatoes are boiled, is of a poisonous nature, and injurious to swine or cattle.

In this state I think it is bad economy to raise much corn or grain for store swine. A warm tight shelter is very necessary for the hog, and this animal, so epicurean and gentlemanly in his diet, must be well lodged, or he will not thrive. An abundance of litter should be furnished him, and this mode of consuming straw is more profitable than when used as fodder for cattle, even if mixed with ruta baga. I would not have it understood that farmers should consume all their straw as litter for swine, but merely that they should not be too stingy in this matter.

I will now say something in regard to the fattening of swine. He that makes the greatest amount of pork, at the least expense, is the best farmer. Mr. Young undertook a number of experiments to ascertain the cheapest mode of fattening swine, and it is said he gave the preference to boiled carrots.

If good pork can be made by feeding swine with carrots, I think it bad economy to consume much corn or grain for this purpose. But the hog is very fastidious in his diet; he must be gratified with a variety, or not thrive; therefore I think some kind of meal should be mixed with his food. Meal made of buckwheat, millet, oats, peas, and barley, are all good: let experiments demonstrate which kinds are best. Swine should be at all times supplied with salt, as well as neat stock. Swine, under the process of fattening, should also be furnished with *sauce*, as well as other epicures; such as boiled apples or boiled pumpkins. O! pumpkins,—have we learned how profitable are boiled pumpkins for fattening swine? To give fattening swine occasionally a quantity of boiled apples or pumpkins will increase their appetites for their other food. One cart-load of pumpkins, when boiled, is worth two cart-loads of potatoes. How many cart loads of pumpkins can be raised upon an acre of land properly cultivated and manured? Will farmers try the experiment?

If our farmers are true to their best interests, we can say to our southern and western friends, whatever else we may want of you, whether it be tobacco, rice or cotton, we will not take your pork.

Rumford, July, 1838.

Unrotted Leaves as Manure—Late Sown Wheat.

[FROM THE FARMER'S REGISTER.]

On reading your article in the November number of the Register, on the subject of the use of leaves as a manure, I am induced to offer you the following experiments which I have made with them. Early

in the spring of 1837, I covered about fifteen acres of high land, with leaves taken from land cleared the previous winter. The land on which I put the leaves was very rolling, and about sixty feet above the level of the flat land on the river. It was very much overrun with blue grass, and required a cleansing crop. The leaves were spread very thickly, and then plastered, at the supposed rate of a bushel and a-half to the acre. The land was then ploughed deeply with a two-horse plough, and was soon after planted in corn, and cultivated altogether with the coulter and hoe. At first it was backward in growing off; but, after it started, it grew rapidly, and withstood the drought of the summer, and continued green longer than my low-ground crop. I did not ascertain the difference between the product of this piece of land and other highland corn that I had on richer and better land; but the result was decidedly in favor of that to which the leaves were applied.

In the fall of 1837, I covered with leaves, quite thickly, a piece of highland of nearly twenty acres, and sowed plaster on two-thirds of the lot, not having enough to sow it all. The leaves were ploughed in, early in January, and before planting corn the land was well harrowed. The cultivation of the crop as before was altogether with the coulter and hoe. It withstood the extreme drought of the past summer better than my low ground corn; and the fodder continued longer green on it, and the yield, though not ascertained by measurement, was a very good one.

I am quite a novice in farming; but the result of my experience (though differing from yours) is, that leaves ploughed in, the earlier in the fall the better, are a valuable manure for corn. They keep the roots moist, and yield nourishment to the plant, and in a dry season have not the injurious effect that farm-pen and stable manures have, of making the crop so liable to burn.

In the fall of 1836, I was stopped in sowing wheat by rain on the 13th November, and though I had only a few days' ploughing, the weather continued so unfavorable that I did not finish sowing until the 14th December. The wheat sowed between the 1st and 13th November had come up before I finished sowing; and that sowed last did not come up until about the middle of February. It then came up very well, and was nearly though not quite so thick as the rest of my field, all being on low grounds. The weather just before harvest, was so wet as to cause rust in a considerable part of my crop. I found on examination, that the wheat I had sown between the 1st and 13th November was very much rusted, and that sown on the 14th December was entirely free from it; and the latter yielded as well as the rest of my low-ground crop. This, though it is at war with the speculations of some of the correspondents of the Register, is no guessing matter, as I have taken it from a memorandum made at the time. The kind of wheat sowed was purple straw and red bearded, which had accidentally got mixed, and they are both late kinds. That sowed in December had only an equal chance with this humbug of spring wheat, and I am quite sure the yield was fully equal to any spring wheat I have seen. Can you, Mr. Editor, or any of your correspondents, explain why the wheat sown in November should have the rust, whilst that sown one month later did not, when every thing was in favor of the first? It was sown next the river, where the land is light and loamy, and was put in in fine order; whereas that sown in

December was on stiff land, inclined to be wet, and, moreover, was ploughed before the land was in good order. The sowing of wheat this fall is unusually late, and the fact above stated may not be uninteresting to your readers.

A PLANTER.

James River, Nov. 10th, 1838.

Cleaning Neat Cattle.

[FROM THE PRACTICAL FARMER.]

The following we translated, and we would invite the attention of farmers to the subject. Our German correspondent is the right kind of a man. He gives his notions well confirmed by experience.—*Ed.*

Xenia, (Ohio,) June 14, 1838.

Mr. Editor,—Allow me through the "Farmer" to say a word to my fellow farmers on what seems to me an important subject. In this country you will seldom find a curry-comb and hand-brush in the cow-stable; but I consider them indispensable in the cow-stable, as in the horse-stable. Why farmers do not curry and brush their cows, I know not, unless it be that they think cleanliness is not so necessary to the cow as to the horse.

But if we will, for a moment, consider the evils arising from the neglect, the importance of keeping cows clean must strike every reflecting mind. It is well known that no animal, neither horse nor cow, can be healthy, unless *the insensible perspiration goes on regularly*, and this can never be going on if cows are kept in a dirty stable, and no pains taken to rub off carefully the dirt or matter which obstructs the vessels or pores of the skin.

Wherever cows are regularly curried and rubbed, they are invariably stronger and in a healthier condition; not liable to *cutaneous* and other diseases; and from experience I know they yield more milk, and that too of a better quality—a cleaner milk, richer cream, and sweeter butter, necessarily follow.

I make it a practice to curry my cows once a day very carefully—I never suffer any dung to stick to their coats—it looks bad, and injures the cows. This useful animal does not deserve such *dirty treatment.* Give them litter sufficient, and remove the dung regularly, and this part is accomplished.

Many of our farmers seem to think that in order to have healthy and good cows, you need only feed them with a sufficiency of food; however, I am fully convinced, from experience, that cows may be well supplied with food, still they will not be as profitable as they would be if kept perfectly clean, and free from all kind of dirt and matter obstructing perspiration, as above stated; besides this, if cows are kept perfectly clean, they will thrive upon a less quantity of food.

Cows are often subject to have swollen teats and udders, as well as other excrescences. These may be prevented if the parts be occasionally washed with warm water. The udder and teats should be carefully washed immediately before the cow is milked. It has been well said by Loudon: "Go to the cow-stall—take with you cold water

and a sponge, and wash each cow's udder clean before milking, dowse the udder with cold water, winter and summer, as it braces, and repels heat."

DAVID HAYMACKER.

Squashes turning to Pumpkins.

[FROM THE GENESEE FARMER.]

Mr. Buckingham, the able editor of the Boston Courier, appears to appreciate the importance of the agricultural interest to the prosperity of the country, and devotes a column or two of his journal weekly to the dissemination of information on this topic. Besides evincing much skill in his selections, he gives some original papers of value. In a late number of his paper is a communication signed 'Ruricola,' who requests an explanation of the fact that squashes do sometimes change to pumpkins, or rather that squash seeds will, when planted, produce pumpkins. Ruricola selected his squash himself, took out the seeds, and planted them; they grew freely, and when he was expecting a feast of this excellent viand, he found they had been metamorphosed into pumpkins. Ruricola asks if this is any thing new under the sun? and requests Mr. Buckingham to explain "this singular freak of nature."

Mr. Buckingham in reply makes in part the following remarks:— "We would observe, however, that it is not an unvarying law of the vegetable kingdom, that like ever does, and ever will produce the like. It is a well known fact, that the seed of apples, pears, peaches, and other fruits, seldom (perhaps not once in a hundred times,) produce fruit like that of the parent tree. But perhaps our correspondent will say that these are not parallel cases, and to make them so, we should cite one in which the seed of an apple should produce a pear, or that of the peach a plum. We will not attempt to remove this difficulty. It is beyond the reach of our knowledge. And we submit it to those whose better experience, and deeper research into the mysterious laws of vegetation qualify them to unravel and explain the same."

Without any pretention to 'better experience' or 'deeper research' than Ruricola or Mr. Buckingham, we think the matter can be explained very easily; and we give what we conceive such explanation the more readily, as the transmutation of squashes into pumpkins, a well known fact, has by many been considered a proof that wheat could be changed to chess, an event which we think never has been, and probably never will be, proved.

To make the matter plain we may remark that botanists divide all plants into species, and these into varieties. Of the species we may give as examples the cucumber *(cucumis,)* and the squash, *(cucurbitis.)* Of the first there are several varieties, as is known to every gardener, and that these varieties will intermix by the seed is also well understood. The squash is another species of plant, with numerous varieties also, among which we may enumerate the *lagenaria*, or gourd; the *ovifera*, or egg squash; the *verrucosa*, or club squash; the *citrullus*, or water-melon; and the *pepo*, or pumpkin. The musk-melon belongs to the *cucumis*, or family of cucumbers.

Now it is well known to the naturalist that while *varieties* will intermix by their seeds, a result caused by the impregnation being performed by pollen from another variety of the same species. *species* never do this; but that while all the varieties of the squash, if planted in the vicinity of each other, are liable to have their seeds affected in this way, so that no certainty can be placed on their producing plants precisely like the parent, there is no danger of change in the cucumber or musk-mellon; from being planted in the vicinity of any variety of the squash. In the varieties of the squash, therefore, great care is necessary to keep the kinds distinct, or prevent, in the way assigned, their intermixing with and degenerating each other. The probability is, that the squash from which Ruricola took his seed was impregnated by pollen from the flowers of pumpkins in the vicinity, and hence the fruit was of course a hybrid, or one in which the pumpkin nearly or entirely predominated. To preserve seed like the parent plant, in the squash or cucumber species, it is found best to save the fruit that grows nearest the root; as in this case the male and female flowers, or those that produce fruit and those that do not, are brought into immediate contact, and the impregnation more likely to be performed with pollen from the same plant, than with that from abroad. Thus we see that the changing of squashes to pumpkins, or vice versa, belongs to the natural order of events, and is nothing new under the sun.

The same rules that regulate the impregnation and production of the cucumis and cucurbitis, will apply to the plants *triticum* and *bromus*, or wheat and chess. Experience shows that an endless variety of shades can be produced by sowing different varieties of wheat in the same field, or so that the pollen can intermix freely with the different flowers, the product, however, as we believe, being some variety of wheat, and never chess or any of its varieties. We have never met with any evidence that the musk-melon has changed to the water-melon, or the cocoanut squash to the cucumber, though frequently planted in the vicinity of each other; the changes are confined to the varieties, and rarely or never reach the species. The remark, therefore, of Mr. Buckingham, that in the vegetable kingdom like does not always produce like, is correct if restricted to varieties, but incorrect if extended to species.

A Hint to Cattle Breeders.

[FROM THE NEW-YORK CULTIVATOR.]

T. A. Knight, the very distinguished horticulturist, publishes in the Farmers' Magazine, a communication on the ill effects of overfeeding young stock. Young cattle thus brought up, when taken into other districts, have been found, with their offspring, incapable of thriving upon common pastures. Animals, he thinks, which have been overfed from their birth, and whose ancestry have been subjected to the same treatment, acquire a power of eating and digesting a much larger portion of food than others. He admits that the improved Durhams are brought to market at a very early age, oxen of very great weight and excellence; yet he says it is very well known that all those young animals come to market deeply insolvent, the sums for which they

are sold being greatly less than those expended in feeding them. In illustration of their expensive keep, he cites the following facts:

"Three Herefords and three Durhams," says he, "were put into stalls, to be fattened on the third of November. The weight of the Herefords was then 33 cwt., and that of the Durhams 38 cwt., and 14 lbs. Between that period and the 30th March, when all were sold in Smithfield, the Durhams consumed 12,755 lbs. weight more of turnips, and 1,714 more pounds of hay, than the Hereford; but the Durhams, notwithstanding the larger size when put to fatten, and the greatly larger quantity of food consumed, sold for only twenty shillings more than the Herefords; and such I believe will ever be the result of similar trials, when one class of animals has been properly fed, and the other overfed, the merits of the breed being equal."

This reasoning is true in regard to perennial vegetables—trees for instance. If the nursery from which they are drawn, and in which they have been raised, is very rich, they will not thrive so well in a common soil, as those which are taken from a soil of an inferior quality. If the habit of gormandizing is established when the plant or animal is young, neither will thrive so well afterwards upon spare food, as if they have been brought upon more moderate fare.

Management and Diseases of Hogs.

[FROM THE FRANKLIN (KY.) FARMER.]

To Chilton Allan, President of the Kentucky State Agricultural Society.

I have seen in a late number of the Franklin Farmer, your circular address, calling upon the friends of improvement for essays upon a number of important subjects relating to the agricultural interests and pursuits of our State. Approving heartily the noble objects of the State Society, I read your address with great satisfaction; and I cannot but believe that the action of the Society will bring about the most gratifying results in improving the science of agriculture, and hence the condition of the husbandman; for I cannot doubt, that every one who desires improvement himself, and who would derive useful information from others will hold himself bound to contribute something to the general stock of knowledge. There are few intelligent farmers who do not know something unknown to others, and it is by an interchange of sentiment and opinion, as well as of experience and practice, that the farmers of the country will be able to see and reject the errors of their husbandry and adopt those modes instead, which lead to improvement and success. In this view, I offer an humble tribute, which at least has the merit of a well meant design of benefiting others in some respects.

The commencement of our prosperity may be dated from the period when our agriculturists turned their attention to the raising of stock for export; and as the consumption and demand have increased in a ratio with the increase of population and wants of the people of the United States, the business has become a source of wealth to Kentucky. And no where has the improvement of stock been so great and so general,

nor more zeal and perseverance manifested to procure the breeds of horses, asses, cattle, sheep and hogs. In enumerating these descriptions of stock, the last is not the least important in bringing wealth to the State, and should be looked to with a fostering care and attention.

Under this belief, I humbly submit to the public through you, the following observations on the management of hogs, with some remarks on some of their diseases.

In giving my views on these subjects, I deem it important to state some of the various ways of raising, feeding and fattening hogs in different sections of the country, which, according to circumstances, soil and climate, will differ; and conclude with my views as to the best mode to be adopted by the farmers of Kentucky under her peculiar circumstances. In Europe and many parts of the United States, hogs are indispensably kept in pens or sties, and as the numbers raised are comparatively small, there is no great expense attending the manner of feeding them; indeed this is the most economical, cheap and convenient method of fattening that could be adopted in any country, where the number fed is small. In some of the New-England States large buildings have been erected for raising and fattening hogs on an extensive scale, fed almost exclusively on vegetables produced on a few acres of land, which gives a profit of 50 per cent. more than any other way in which the products of the land could be disposed of. On this extensive scale, the business is unconnected with any other, having for its object the raising and fattening of hogs alone, for it requires the most strict attention which daily habit and the most scrutinizing observation, in time reduced to a perfect system, can give. It was ascertained to a fraction what each hog would eat at a meal, which was measured out to him three times a day, the quantity according to age, allowing six of the same age to occupy a sty, which was regularly littered and cleaned out once a day. The amount of vegetables required per day, and the necessity of the different varieties coming on in due season, would require great attention. At the first view of the subject, we would conclude that a piggery conducted in like manner in Kentucky, would be equally profitable. But not so—there would be this difference:—The price of pork and lard in Boston is more than 50 per cent. higher than in Louisville; and the profit accruing from the superabundance of manure, which is worth from two to three dollars a load in the New-England States, will amount to a large sum, which, with us, would be excluded from the estimate, as it will bring nothing here on sale, though useful to the land on which the hogs are fattened. In two hundred hogs annually sold, these causes would produce a difference of perhaps three thousand dollars in favor of the New-England piggery.

Say 500 hogs at 200 lbs. each, 40,000 lbs. pork at 10 cents in Boston, - - - - - -	$4,000
For their manure, - - - - -	1,000
	$5,000
40,000 lbs. pork at Louisville, at 5 cents, - -	2,000
Leaving a difference in favor of the New-England piggery,	3,000

In no way could an extensive piggery be made profitable to us but by being connected with a distillery. The expenses would then be

much lessened; for it would require but a few vegetables or little meal added to the slop of the distillery to make the swill highly nutritive. They might be put to graze in the summer and swill given them occasionally, and again put in the fall.

The manner of feeding and fattening hogs now generally adopted in this State, seems to me to be well calculated for our method of cultivation. Taking into consideration the products and the great number of hogs fatted for other markets, together with a great number of beef cattle annually grazed and fed, the system is complete. In winter, they are amply supplied with food from the refused corn and pudding of the cattle—two or three hogs to each head of cattle finding thus abundant sustenance. In the spring, when the cattle are no longer fed, the hogs are put on the exuberant clover field, which was sown for the double purpose of enriching the land and supplying rich food for their cattle and hogs. In due time, when the clover becomes hard, and unfit for the hogs, it is given up to the earth, and they are removed to the rye fields, there to fatten and complete another system of manuring, so admirably adapted to our lands and our wants. So soon as the rye field is consumed, the corn field is ready to receive them,* and in due time they are ready for market, leaving the fields and pastures richer than they were.

Although this arrangement is good for feeding and fattening, yet there are other important matters in relation to their raising and health, which in no wise should be neglected. Experience has taught me, that no matter how many pigs a sow has over six, they should be reduced to that number, always retaining the large and healthy ones; for I can, and will demonstrate, that six pigs will make more pork at twelve or eighteen months old, than eight would of the same litter—and eight will make more than ten. Give to the six the food which you would give the eight or ten, and you will find in the result the truth of my statement proven. It is essential that pigs be kept fat while sucking, and to have them so, six is a better number than eight or ten. At weaning time, or when sixty days old, the time when the sows decline in milk, particular attention should be paid to the pigs, having them regularly fed either with corn or swill, for at this juncture, they are unaccustomed to *root for themselves*, and will rapidly lose their flesh and their health, and their growth will be retarded, if left to shift for themselves. If they are kept fat during the fall, when provisions are plenty and cheap, they will keep thrifty and well during the winter, on very moderate feeding; but I prefer liberal feeding throughout. The food is by no means thrown away, as you will have more pork and not any more corn consumed in the end.

Hogs should be kept free from diseases; particularly the disease of worms, which is very pernicious, and a constant attendant on poor hogs. Liberal feeding, at all times, is the best preventive, *but when it is not in the crib*, brimstone, spirits of turpentine, or tar mixed with their food will remedy the evil. All hogs are more or less subject to

*We presume our writer does not intend to be understood, that the hogs are turned into the corn-field; for though this practice may be adopted by some, the more general custom is to put them in a large pen adjoining, into which the corn is thrown. If the corn is not sufficiently ripe when the rye is consumed, old corn is fed to the hogs; and indeed, the feeders generally, we believe, prefer beginning to feed them on old corn after they are put up—introducing the new rather cautiously and gradually.—*Ed. F. Farmer.*

worms; but some are so overcharged, that their intestines are literally filled with them, and unless they are extirpated, it is throwing away corn to feed them, for in this condition it is almost impossible to fatten them; they will consume twice as much as a hog will, not troubled with them, as the nutricious juices are taken up by the worms, and their fetid excrement is all that is left as a miserable substitute for sustenance.

The most fatal disease of hogs is the swelled throat or quinsy. This too, is easily prevented. I have long been of the opinion that it proceeds from indigestion, caused by feeding on hard grasses or clover in their declining state; and my successful practice as a preventive for the last eight years is a strong confirmation. Yet it matters not concerning the cause, provided there is a remedy. The disease in the last stage, is highly inflammatory, but at no time infectious. It is an accumulation of matter formed between the glands of the jowl, which continues to inflame till the hog dies of suffocation. The disease may be cured before and after the matter begins to form; but as it may be more satisfactory to state my experience and knowledge on the subject, I will give an instance as coming under my observation, and conclude with my practice as a cure and preventive. In 1830, I discovered the disease among my hogs by the death of one of the fattest. As soon as possible I had them removed from the clover field, and put in a spacious pen, where they were fed with as much corn as they would eat after it was glazed with tar and as much ashes put on as would adhere to the grains. They still continued to die till I lost to the number of fifteen. This great number dying out of eighty, caused me to doubt the efficacy of the remedy, or that the disease was too rapid for its effect. Shortly after, they were put up to fatten, which they did very readily, and I was left in doubts as to the effect of the medicine, until the day I butchered, when I found lumps of coadjulated matter in the jowls of many, about the sixe of a hazelnut or larger, without any signs of inflammation around them. I then came to the conclusion that they would have died had it not been for the remedy applied, and that the disease of those that died had advanced too far to be cured by any remedy. Observing that hogs kept in sties never had the quinsy, I attributed it to the wholesome quality of food they ate, and on the contrary, the cause of their having it out of sties, to the pernicious qualities of hard dry grasses. Since 1830, I have invariably given my hogs, during the spring and summer months when grazing, slop or swill once a week or oftener, consisting of kitchen slop with cooked vegetables of various kinds, apples, &c., with bran or a little meal, mashed to a paste, salted and cooled off by adding a quantity of water, and occasionally brimstone or saltpetre. Since the above date, my attention has been directed to the raising and fattening of hogs on the products of a small farm, and I have never yet lost a hog by this disease, nor in my recollection by any other. My opinion is still further supported as to the cause of the swelled throat, by its being less frequent since the practice lately adopted in putting the hogs to graze when the clover is young and tender, and taking them off when it is old and tough.

Every body knows that the young and old hogs should be kept apart in winter; and yet how shamefully that important matter is neglected by many. Young and old, great and small are crowded together, day

and night, mashing and smothering; and yet many will look on with heedless regard at the great destruction of their young stock, without separating them. When young and old are fed together, the old will always get more than their share, thereby the young become poor and diseased, making little or no progress in growth.

The breed of hogs best calculated for our general purpose is yet to be ascertained. Within a few years, great exertions have been made, at considerable expense, to procure the best breeds, but whether any of them answer our expectations, I think very doubtful. The breeds imported here, were improvements made to suit the purposes of others under different circumstances, different soil and climate, different food and management, and under a different method of disposing of the pork, and according to our present mode of farming; thus differing from the methods abroad, whence these hogs have been brought, and our surplus pork being chiefly driven to the south, I think ultimately they will not do except in the event of the successful completion of the rail-road from Lexington to Charleston. Then the smaller and earlier matured hogs, the Byfields, the Berkshires, the Bedfords, &c., will be more profitable than the larger breeds. But should this all-important improvement to the west prove abortive, the hog that will be best calculated for our interests, is yet to be improved by some judicious cross from our present great variety of breeds. The fat varieties, as the Bedford, Berkshire, &c., from their early propensity to fatten, are best for family use and home consumption, but owing to their incapability to travel, they must measurably give way to the longer-legged hog, until the rail-road from Lexington to Charleston is complete.

BIRD SMITH,
Member Ky. State Agricultural Society.

Useful Instructions regarding the Milking of Cows.

[From the Quarterly Journal of Agriculture.]

The operation of milking is performed differently in various parts of the country. In some, the dairy maid dips her hand into a little milk, and by successively stripping the teat between the finger and thumb, unloads the udder. The plan, however, is attended with the disadvantage of irritating more or less the teat, and rendering it liable to cracks and chaps, which are followed by inflammation, extending to the rest of the quarter. This accounts for the disease occurring more frequently among the cows under the charge of one milker than it does in those which are under the charge of another; and, as this practice is more common in some parts of the country than in others, it also accounts for the disease being more common in these parts. This plan of milking, where the irritation is not sufficient to excite the extent of inflammation to which I have alluded, frequently produces a horny thickening of the teat, a consequence of the cracks and chaps, which renders it more difficult to milk than when in its natural state; and at the same time predisposes to inflammation, when any case occurs to set it up. These effects may be, and are almost entirely avoided, by the more scientific plan of milking adopted in other parts of the country, where, instead of drawing down or stripping the teat

between the thumb and fingers, the dairy maid follows more closely the principles which instinct has taught the calf. (The calf jerks its nose into the udder and forces down the milk.) She first takes a slight hold of the teat with her hand, by which she merely encircles it, then lifts her hand up, so as to press the body of the udder upwards, by which the milk escapes into the teat, or if (as is the case when some hours have elapsed between milking times) the teat is full, she grasps the teat close to its origin with her thumb and fore-finger, so as to prevent the milk which is in the teat from escaping upwards; then making the rest of the fingers to close from above downwards in succession, forces out what milk may be contained in the teat through the opening of it. The hand is again pressed up and closed as before, and thus by repeating this action, the udder is completely emptied, without that coarse tugging and tearing of the teat which is so apt to produce disease.

Genuine Morus Multicaulis. Not exempt from the Depredations of Insects.

" *October* 18*th*, 1838.

[FROM THE FARMERS' REGISTER.]

As Mr. Gideon B. Smith seems to be considered, by yourself and others, the best authority in regard to the multicaulis mulberry, there are two assertions in his communication in your last Register, which induce me to fear that I, who am one of the humbugged class, may have been buying the wrong sort. Mr. Smith says, "the leaves, when full grown on the vigorous wood, are twelve to fifteen inches in length, and ten to thirteen wide." Now, after inspecting many hundred bushes of the kind I have purchased, which had all the appearance of vigorous growth, I have seen no leaf much, if any more than half that size. It is true, I did not apply my rule, but my eyes could not so far deceive me.

Again—Mr. Smith asserts, as "a remarkable fact, that all the species and varieties of mulberry tree are exempt from the depredations of all insects, except the silk-worm." He farther states, that, "during ten years that he had been a close and daily observer of the morus multicaulis particularly, he never saw an insect of any kind upon it." Since I know, from many years' observation, that he is mistaken in what he assumes to be a fact—at least so far as our native varieties, and the English mulberry, cultivated in our gardens, are concerned—I hope he is so in regard to the multicaulis, also. If he is not, then have I an additional reason to fear that my purchase is not of the genuine kind: for, the few plants saved of a small trial made last spring, have their stems and many of their leaves now nearly covered with numerous small, greenish-colored bugs, that seem quite as much at home as if they were in their native domicil. We have been dosing them with soap-suds to kill or drive them off; but have not yet ascertained how the physic will work. It is probable, however, that it will be effectual; for these little depredators appear to be the same species which often infest our rose-bushes, and which are easily destroyed or driven away, either by soap-suds, or soot and

water. This last mixture, by the way, is an excellent thing, if not made too strong, for accelerating the growth of all garden vegetables, especially where the ground has not been fully manured.

I remain your friend and constant reader,

J. M. G."

An editorial note, attached to the passage referred to above, stated another exception to the general rule which Mr. Smith had given as the result of his experience. That note drew from him the following passage of one of his private letters:

"I am much surprised at your note (page 431, No. 7,) relative to the caterpillars devouring the multicaulis, and thank you for it. It is the first instance I ever heard of, and I fear it is the forerunner of a terrible calamity to the cause of the silk-culture in this country. I never heard of these insects touching any species of mulberry before; and as they never quit any kind of trees after they once begin upon them, I much fear they will extend their depredations to the mulberry generally; and if they do, it will be a sad drawback upon the business. But five years ago, our elms, (in Baltimore,) that had stood untouched by any insect for ages, were first observed to be infected by a small caterpillar; the insects increased every year, until in the last two years, our once stately and, as ornamental trees, entirely unequalled elms, have been entirely stripped of foliage, as though a deadly blast of fire had passed through them. Last year, the beautiful lindens were first visited by the same insect, and now expect them also to share the fate of the elms."

We presume that our friend, J. M. G., need not distrust the *genuine* character of his plants, merely because of the smaller size of the leaves. The sizes spoken of by Mr. Smith, were the largest, and not meant as usually found, on any but very luxuriant growth. No one who has once noticed the multicaulis, can mistake it for any other kind of mulberry tree; and, therefore, the person who furnished to our correspondent his original stock, could not have given a wrong kind, unless wilfully, and by designed deception.—*Ed. Far. Reg.*

To Measure Hay in the Stack.

[FROM THE GENESEE FARMER.]

When hay is sold by the stack, or where farmers wish to know the quantity they may have on hand, measurement, instead of the tedious process of weighing, may be conveniently practised. The first object is to ascertain the number of cubic yards contained in the stack. As the practice of building them round or circular, is by far the most common, it is necessary in ascertaining the contents of such, to measure round them at different heights but at *regular* distances, (omitting the part above the eaves, if it is a regular cone, as is usual,) and these measurements added together and divided by their joint number will give the mean circumference. The square of this is then to be multiplied by the decimal .0796; the product thus obtained is again to be multiplied by the height up to the eave with one third of the rise from the eaves to the peak, and this last product will be the number of cubic feet in the stack. Divide this by 27, and it will give the cubic yards.

The measurement round may be performed by a cord, drawing it close to the stack, and allowing about six inches in depth for loose hay. The height may be known with sufficient accuracy by placing a pole perpendicularly beside the stack, standing off a few rods, and observing with the eye.

If the stack is square or oblong, multiply the medium length by the medium breadth, and that product by the medium height, (which is the height to the eaves and one third of the rise of the roof taken together,) and the last product will be the solid content.

If the hay has been put up in a moist condition as admits of safety, and has stood six months in the stack, ten cubic yards will make a ton. If it has been put up very dry, twelve will be required, if chiefly clover, even as many as thirteen. If the stack is very large, and has been put up quite moist so as to need copious salting, eight or nine cubic yards will make a ton. According to the experience of the writer, the difference between the most moist and the most dry, at the time of stacking, is after settling about as eight to twelve. These circumstances are then all to be taken into consideration. But notwithstanding this variation, the method of measuring is far more accurate than that of *guessing* the quantity. J. J. T.

Substitute for Spaying.

[FROM THE CULTIVATOR.]

Ivanhoe, Campbell Co. August 18, 1838.

Dear Sir,—I have been for some time an attentive reader of your valuable paper; from each page information is to be gained. In your last number, you instruct us how to perform the operation of caponing cocks, before which I knew not. And it is the above which prompts me to give you the following information:

The old method of gelding sows is not only very cruel, but quite disagreeable to the operator, as well as dangerous to fat animals. Now sir, the modus operandi in this neighborhood, as practised by myself lately, but much longer by others, is simply this:—For convenience use a common goose quill as a tube, cutting off smoothly the small end, the other shaped as for a tooth-pick, to be used as a handle; then pass the small end down the vagina two inches or more, (according to the size of the animal,) through which drop six or seven shot, say No. 3, and your work is complete. Nothing can be more simple, innocent, or efficacious.

Very respectfully your ob't. serv't.

EDWARD B. WITHERS.

PART III.

MISCELLANEOUS INTELLIGENCE.

Removing Mulberry Trees.—Mulberry trees which are to be taken out of the ground before winter can be ploughed up easily and expeditiously. Attach two horses to the plough, one before the other; turn a furrow from one side of the row of trees, then run the plough on the opposite side under the roots. They can then be removed by the hands without injury to the plant. Ten thousand can be taken up in this way in an hour.—*Silk Grower.*

Potatoes produced by Cuttings.—It is stated that an English farmer who resides near Bristol, has succeeded in raising this valuable root from cuttings. The method was thus, as described by himself. "When the potatoes were about nine inches high, I cut off the tops, about six inches long, planted them in a line about eight inches apart, with a flat dibble, pressing the earth carefully against them, gave them water, and afterwards hoed them as an ordinary crop, I produced this way a good crop."

To wash Woolen Goods.—This art of washing woolen goods so as to prevent them from shrinking is one of the desiderata in domestic economy worthy of being recorded, and it is therefore with a satisfaction we explain this simple process to our readers. All descriptions of woolen goods should be washed in very hot water with soap, and as soon as the article is cleansed, immerse it in cold water; let it then be wrung and hung up to dry.

Practical effects of Draining.—The system of draining introduced into Scotland some years ago, and proceeding so rapidly, must be regarded as the greatest improvement of modern times. The landlord and farmer do it jointly. Here is a safe investment for money—the expense re-paid in twenty years, regular interest, and the land improved in value above one-third. Green crops are grown in great abundance after draining, where no attempt could be made before, and the farmers allow they have four crops in three years, and the draining pays on an average eight per cent. I know an instance of a wet clay soil, almost covered with rushes, being drained and improved at an expense of £15 an acre, ($65); the green crops were so productive as to repay the expense in one year, and after deducting the old rent, the improvemnnt pays fourteen per cent. upon the outlay. The drains are from twenty to thirty inches deep, and at the distance of from twelve to twenty feet, sometimes in the furrows of the field, or across, or obliquely as the descent may suit, and sometimes the land is laid flat. Draining, to be remunerative, must be done effectually. A field cannot be drained by putting a drain in a corner, one here and another there; by running one across the field, and another diagonally to that. It must be done completely, or not at all, for half measures are useless.

Village Lighted by Natural Gas.—The village of Fredonia, in the western part of the State of New-York, presents this singular phenomenon. I was detained there a day in October of last year, and had an opportunity of examining it at leisure. The village is forty miles from Buffalo, and about two from Lake Erie; a small but rapid stream, called the Canadoway passes through it, and after turning several mills discharges itself into the lake below; near the mouth is a small harbor with a light-house. While removing an old mill which stood partly over this

stream in Fredonia, three years since, some bubbles were observed to break frequently from the water, and on trial were found to be inflammable. A company was formed, and a hole an inch and a-half in diameter, being bored through the rock, a soft fetid limestone, the gas left its natural channel and ascended through this. A gasometer was then constructed, with a small house for its protection, and pipes being laid, the gas is conveyed through the whole village. One hundred lights are fed from it more or less, at an expense of one dollar and a-half yearly for each. The flame is large, but not so strong or brilliant as that from gas in our cities; it is, however, in high favor with the inhabitants. The gasometer, I found on measurement, collected eighty-eight cubic feet in twelve hours during the day; but the man who has charge of it told me that more might be procured with a larger apparatus. About a mile from the village, and in the same stream, it comes up in quantities four or five times as great. The contractor for the light-house purchased the right to it, and laid pipes to the lake; but found it impossible to make it descend, the difference in elevation being very great. It preferred its own natural channels, and bubbled up beyond the reach of his gasometer. The gas is carburetted hydrogen, and is supposed to come from beds of bituminous coal; the only rock visible, however, here, and to a great extent on both sides along the southern shore of the lake, is fetid limestone.—*Brewster's Journal.*

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Planting of Trees.—Ch. Blakeslee, of Newton, Ct. states to us, that last spring he planted out fourteen maple trees, in the following manner:—He put them in holes so shallow as to bring the tops of their roots to the surface of the ground. He then brought loam and turf from a hollow, and raised a mound over the roots one foot high, and eight feet in diameter, and covered the mound with small stones. Notwithstanding the drought of the season, every tree thus served lived, while others, planted in the usual way, all died. Mr. B. ascribes his success to the fact; that the small stones prevented the exhalation of moisture, and deterred cattle or swine from rubbing against and loosing them.—*Frank. Far.*

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Planting Fruit Trees.—It should be remembered that the proper time for planting fruit seeds and nuts of all kinds is the fall, or at any rate the seeds should be suffered to freeze in the ground during the winter. The action of the frost cracks the hard shell and gives the sprout an opportunity to grow. It is sometimes the case that the frost is not sufficiently severe to crack the shell of hard nuts, such as walnuts, oilnuts, peachstones, &c. In such case, they should be taken up in the spring and the shell cracked, care being taken not to bruise or injure the meat, and then plant them where you wish them to remain.—*Maine Farmer.*

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The annoyance of grass or weeds springing up between the stones of pavements and in gravel walks, &c., may be got rid of for years, by watering with a solution of lime and sulphur in boiling water.—*English paper.*

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American Locomotives abroad.—We learn (says the U. S. Gazette) that Mr. Norris, jun'r., of Philadelphia, has recently received an order from Liverpool for the manufacture of eleven locomotives for the Gloucester and Birmingham Rail-road at a cost of $85,000.

Seven locomotives have been ordered of the same gentleman, for Austria.

The Augsburg Gazette speaks in high terms of praise of the performances of one of Mr. Norris's locomotives ordered of him and forwarded to Germany.

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To remove Water Spots from Black Crape Veils.—If a drop of water fall upon black transparent crape, it immediately turns it white, leaving a disfiguring mark. To remove this, spread the veil on the table, laying smoothly under the stain, a piece of old black silk. Then dip a camel's hair pencil into some good writing ink, and wet the white spot with it. Immediately, and before the ink has time to dry, wipe it off with an old piece of Canton crape or something of similar soft texture, taking care to rub it crosswise of the crape. This process will cause the water stain entirely to disappear, and unless the ink is allowed to dry before it is wiped off, no mark will be seen on the place.

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The number of police constables on duty on the day of the Coronation in London was 2,900.

Dr. Johnson somewhere used a happy illustration, of which I can only recollect the outline. Let a man sit down at the foot of a high mountain to contemplate its greatness, and he will be ready to say, "The attempt is futile: I can never go over it." Yet, on second thought, he perceives that the work is to be achieved, not at one mighty leap, but by successive steps, and by the simple process of putting one foot before the other. The same great philosopher has ssid: "The chief art of learning, as Locke has observed, is to attempt but little at a time. The widest excursions of the mind are made by short flights frequently repeated: the most lofty fabrics of science are formed by the accumulation of single propositions." Sands make the year. The rock is worn away, not by sudden force, but by perpetual droppings.

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"Success in every art, whatever may be the natural talent, is always the reward of industry and pains. But the instances are many, of men of the finest natural genius, whose beginning has promised much, but who have degenerated wretchedly as they advanced, because they trusted to their gifts, and made no efforts to improve."—*Ware.*

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A Misprint.—A considerable sensation was created during the past week among the fair matrons of Wilmslow, and neighborhood, the location of the Rev. J. W. Morris, by the circulation of a report, put forth in the North Cheshire Reformer, that their Rev. Pastor had been advocating in Stockport, and urging on the inhabitants to petition for a taxation on wives! The whole village was in an uproar. The females held a consultation, at which the wives said, that if such a tax was levied, it would create family quarrels, and the maids justly argued that the chances of marriage would be fearfully increased against them. After which they came to a resolution to proceed to Mr Morris's house. Mr. Morris was apprized by one of his friends of the predicament in which he had placed himself, and when he saw the maids and matrons proceeding to his house, his fears were excited, and, securing himself by locks and bolts against the injured fair, he went up stairs and endeavored to appease their wrath by a speech from the chamber window, in which he laid the blame on the printer for his carelessness in making a misprint. The ladies not knowing any thing about a misprint, seperated. assuring him of what they would do when they caught him on his way to Stockport. The misprint was wives for wines.—*Stockport Ador.*

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Anthracite Coal.—On the night of the 4th inst., John Thomas and Charles Gaskill, of Mauayund, retired to rest in a room in which was a coal stove, placed there to dry the new plastering. In the morning they were found insensible, their mouths foaming, and their faces distorted. With friction, they partially revived, but Mr. Gaskill, aged 22, died soon after. Mr. Thomas recovered. Our informant says, that every effort was made to restore the patients.

Some people suppose that anthracite coal will not produce suffocation like charcoal. But this is a great error, for two reasons; first, both anthracite and charcoal emit, in combustion, carbonic acid gas, which is destructive to animal life; and second by, in combustion, oxygen gas, the only substance that supports animal life, is absorbed.—*Philadelphia Ledger.*

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It appears from a calculation made by M. Hericart de Thury, that there are in Paris and the Banlieue 248 florists, of whom 137 are within the walls; 184 nurserymen, 136 of whom are in the Banlieue, and 753 market gardeners. Reckoning three men for each master, this will give 4,740 persons—masters and men—employed in these branches of industry.

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Soup.—Soup is one of the cheapest, and, to some palates, the most agreeable dish that can be set upon a table, and the following is the most convenient way of preparing it we know of. After taking your meat, potatoes and cabbage from the pot, put into the liquor a little thickening of meal or flour, previously stirred up in cold water, and let it boil up, and you have a soup that is superior to the best French cookery. It is a great waste to throw away the liquor in which meat and vegetables have been boiled.—*Maine Farmer.*

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Interesting to Tea Drinkers.—A late traveller states that in drinking tea at Odessa, lemon is substituted for milk. A slice of the fruit is handed round with each cup, and the excellence of the flavor thus communicated to the beverage attests the good taste of those who adopt the custom.